Water Resource Report 56

1983

GROUNDWATER RESOURCES OF THE WEST BRANCH SUSQUEHANNA RIVER BASIN, PENNSYLVANIA

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
OFFICE OF RESOURCES MANAGEMENT
BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist

PREPARED IN COOPERATION WITH
SUSQUEHANNA RIVER BASIN COMMISSION

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Photograph by Grant H

Prospect looking west from Hyner View, Clinton County. This scenic lookout provides an excellent overview of the West Branch Susquehanna River and the characteristic topography of the Appalachian Plateaus physiographic province.

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ABSTRACT

The West Branch Susquehanna River basin has an abundant water resource resulting from an average annual precipitation of about 40 inches. Streamflow accounts for roughly 60 percent of precipitation, or about 23 inches. Groundwater flow makes up about 65 percent of streamflow (15 inches).

Groundwater use in the basin was approximately 57 million gallons per day in 1970. State Water Plan projections are for more than a 20 percent increase in domestic and public water use by 1990, most of which will come from groundwater. Even with this increase only a small fraction of the available groundwater resource will be utilized.

The aquifers in the basin are a thick sequence of folded (Valley and Ridge physiographic province) and flat-lying (Appalachian Plateaus physiographic province) sedimentary rocks consisting chiefly of sandstone, siltstone, shale, and limestone. Sandstone generally forms the ridges because of its resistance to weathering, whereas nonresistant limestone and shale primarily underlie valleys.

Recharge to the groundwater in the sandstone and shale of the Appalachian Plateaus province averages 510 (gal/min)mi^2 (gallons per minute per square mile). The combined rock types in the Valley and Ridge province are estimated to be recharged at an average rate of between 280 and 380 (gal/min)/mi^2. Valleys underlain by carbonate rocks have an average recharge rate of 420 (gal/min)/mi^2.

Groundwater levels are at a median depth of 18 feet in valleys, 55 feet under hillsides, and 80 feet under hilltops. Bedrock units that consist mainly of shale have the shallowest median water levels and those consisting of carbonates have the deepest.

Lithology, topography, and geologic structure influence the depth, size, and abundance of water-bearing zones and thus well yields. Rocks that consist primarily of limestone or dolomite have the highest well yields, followed by sandstone and shale, respectively.

Yields of valley wells are two to three times higher than those of wells located in other topographic settings. Geologic structures that have an important influence on well yields are faults, folds, fractures, and bedrock dips.

Groundwater quality is generally adequate for most uses. The major differences in natural chemistry occur between waters from primarily calcareous and primarily noncalcareous rock units.

The most commonly reported groundwater-quality problems in the basin are as follows, in approximate order of prevalence: excessive iron and manganese, hydrogen sulfide, hardness, bacterial organisms from sewage, acid mine drainage, petroleum products from buried storage tanks, excessive nitrates, and landfill leachate.

INTRODUCTION

PURPOSE AND SCOPE

This report is one of four prepared by the Pennsylvania Geological Survey as part of the three-year Special Groundwater Study of the Susquehanna River basin by the Susquehanna River Basin Commission in cooperation with various state and federal agencies. The respective areas covered by the reports are shown in Figure 1.

The reports are designed to make the large volume of data, collected during the comparatively short duration of the project, available to the public as rapidly as possible, and as a result they contain only a minimum of inter-

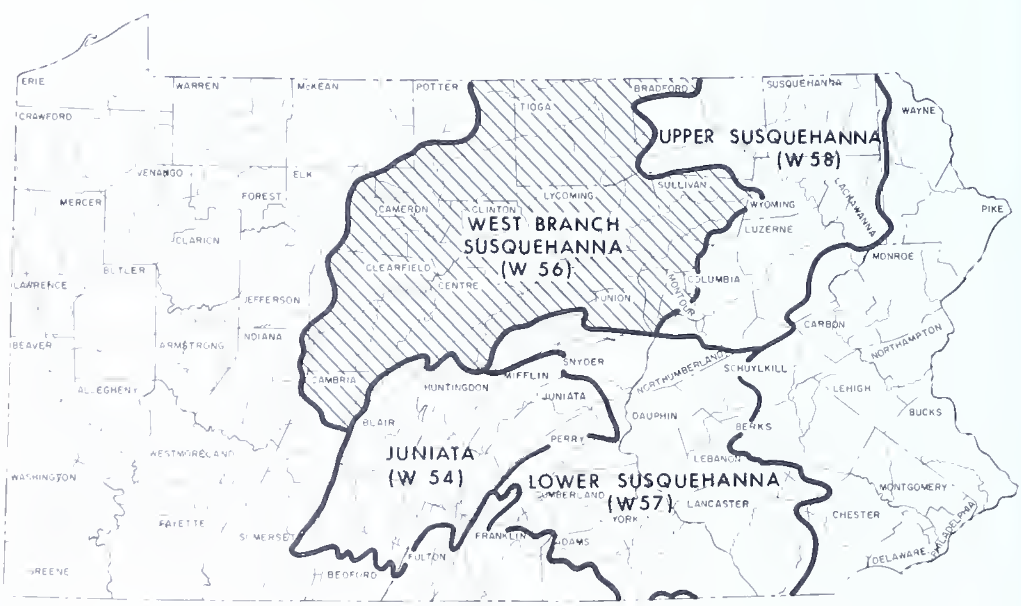


Figure 1. Location of the Pennsylvania portion of the Susquehanna River basin, the West Branch Susquehanna River basin, and the three additional report areas.

pretation. This up-to-date information and data on the quantity and quality of groundwater within the report areas should assist in the optimum development and utilization of the resource and form the basis for detailed investigations to follow.

LOCATION AND DESCRIPTION OF THE AREA

The portion of the Susquehanna River basin covered in this report drains an area of about 7,820 square miles in north-central Pennsylvania. The West Branch Susquehanna River basin covers about 90 percent of the total area; the Pennsylvania portion of the Tioga River basin and a small part of the Chemung River basin make up the remainder. For simplicity, the area as a whole is referred to in this report as the West Branch Susquehanna River basin.[1] All or most of Cameron, Centre, Clinton, Clearfield, Lycoming, Montour, Potter, Sullivan, Tioga, and Union Counties, along with parts of Bradford, Cambria, Columbia, Elk, Indiana, Northumberland, McKean, and Wyoming Counties, are included (Figure 1).

The topography is primarily mountainous, consisting of a series of roughly northeast-southwest-trending ridges and valleys in the southern part and high, flat-topped plateaus separated by steep-sided valleys to the north. Farming is the predominant economic activity and occurs throughout the valleys. The population is centered in three important manufacturing areas—Williamsport, Lock Haven, and Clearfield—and in an educational center, State College. The largest of these centers, the Williamsport metropolitan area, contains nearly 85,000 people, whereas the smallest, Clearfield, has only 8,000 residents. Table 1 lists population totals by county for this primarily rural region. The preponderance of forest lands and agriculture over other land uses within the basin is clearly shown in Figure 2; approximately 92 percent of the land surface is included in these two use categories.

ACKNOWLEDGEMENTS

The writers are grateful to the many well owners who allowed their wells to be tested and sampled. The U.S. Geological Survey, the Susquehanna River Basin Commission, and the Bureau of Laboratories within the Pennsylvania Department of Environmental Resources provided valuable input and data to the project.

Nancy S. duPont and Philip J. Walsh, Jr., were very helpful in the collection of field data for the project.

[1] The same area was referred to as the western part of the upper Susquehanna River basin in W 54, *Groundwater Resources of the Juniata River Basin, Pennsylvania* (Taylor and others, 1982).

Table 1. *County and Basin Population Totals and Projections for the West Branch Susquehanna River Basin*

(Modified from Pennsylvania Department of Environmental Resources, 1979, 1980)

County	1970	1990	Percent increase
Bradford	[1]58,103	64,689	11.3
Cambria	187,027	207,127	10.7
Cameron	7,098	9,561	34.7
Centre	99,601	123,027	23.5
Clearfield	74,757	75,156	0.5
Clinton	37,779	44,470	17.7
Elk	37,848	44,827	18.4
Lycoming	113,494	127,403	12.3
Montour	16,520	17,735	7.4
Northumberland	99,270	104,107	4.9
Potter	16,433	24,836	51.1
Sullivan	5,972	6,031	1.0
Tioga	39,757	47,598	19.7
Union	28,603	33,142	15.6
Basin totals	472,582	543,992	15.1

[1] Total for county even if only partly within the basin. Counties having a very small area in the basin are not listed.

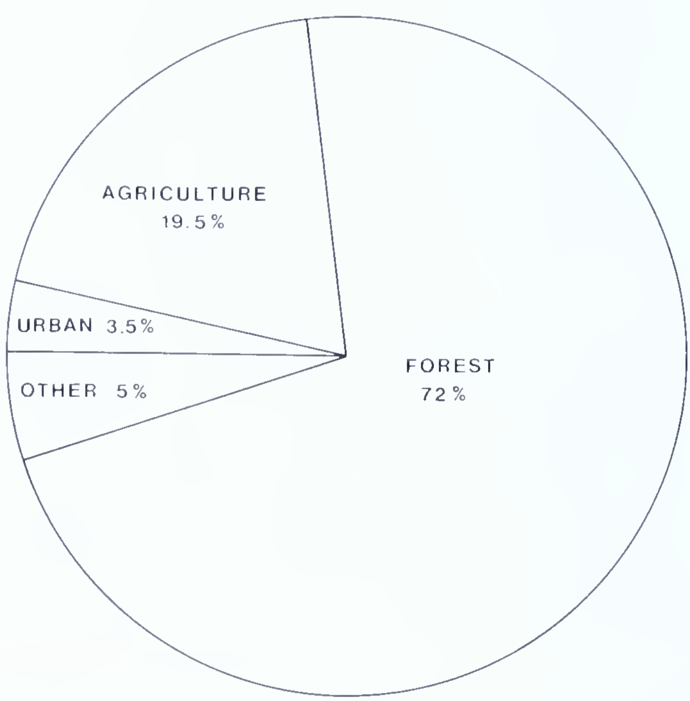


Figure 2. Percent land use by category (1974).

WATER USE

Total water use in the study area was estimated in the Pennsylvania Department of Environmental Resources State Water Plan (1979, 1980) to be about 110 Mgal/d (million gallons per day) in 1970. More than half of this water (about 52 percent) is obtained from underground sources. Public water suppliers are the largest users of groundwater, followed by industrial and domestic consumers, in that order (Table 2). The major users of groundwater and their sources of supply are listed in Table 3, *Public Water Suppliers Utilizing Groundwater*, and Table 4, *Industries Using More than 100,000 Gallons per Day of Groundwater*.

Table 2. ***Water Use for 1970 in the West Branch Susquehanna River Basin***

(Modified from Pennsylvania Department of Environmental Resources, 1979, 1980)

Type of use	Withdrawals (Mgal/d) Groundwater	Surface water	Total
Public supply	21.1	23.9	45.0
Domestic supply	8.6	0.0	8.6
Industrial	17.5	22.2	39.7
Mineral	1.6	.3	1.9
Agricultural	3.1	5.4	8.5
Golf course	1.4	.6	2.0
Institutional	3.8	.1	3.9
Totals	57.1	52.5	109.6

State Water Plan projections for most portions of the basin are for more than a 20 percent increase in public and domestic supplies by 1990; most of this increase will be supplied by groundwater. Generally smaller increases are projected for other use categories. However, a trend toward a higher percentage use of groundwater rather than surface water is expected in all categories because of limitations placed upon the use of surface water during low-flow periods.

Table 2 indicates that mineral extraction and processing sites utilize a relatively small fraction of total groundwater withdrawn from the basin. Even though the combined withdrawal is small, individual sites that remove large amounts of water may cause severe localized depressions in the water table. Table 5 lists quarrying operations reported to be withdrawing in excess of 100,000 gallons per day. Withdrawals of this magnitude are known to have caused significant reductions in water levels at other locations, although no large drawdowns were documented in this study.

Table 3. *Public Water Suppliers Utilizing Groundwater*

County	Water supplier	Groundwater sources
Cambria	Barnesboro Water Company	1 well (Ca-30), 3 springs
	Carrolltown Borough Water Department	5 wells (Ca-21, 267, 268, 269, 270), 1 spring
	Cogent Midpoint, Inc.	1 well
	Elder Township Water Authority	1 spring
	G & H Water Company	1 well (Ca-107)
	Gallitzin Water Department	5 springs
	North Cambria Water Company	1 well (Ca-32)[1]
	West Carroll Township Water Authority	3 springs
Centre	Bellefonte Borough Water Department	1 spring (Big Spring)
	Clarence Water Company	1 spring
	Ferguson Township Water Authority	3 wells (Ce-214, 215, 216)
	Harris Township Authority	1 well (Ce-174)[1]
	Howard Borough Water Department	1 well (Ce-209)[1]
	Lemont Water Company	1 well (Ce-162), 2 springs
	Moshannon Valley Water Company	1 spring[1]
	Pennsylvania State University	7 wells (Ce-99, 101, 102, 106, 112, 114, 117)
	Pine Glen Development Company	2 springs[1]
	Pleasant Gap Water Supply Company	2 wells (Ce-78, 207), 6 springs
	Port Matilda Water Works	2 wells (Ce-136, 137), 1 spring
	Ridgemont Water System	2 wells (Ce-133, 134)
	State College Borough Authority	5 wells (Ce-145, 146, 149, 152, 163)[1]
	Unionville Water Works	2 springs
Clearfield	Burnside Borough Water System	1 well (Cf-220), 1 spring
	Coalport Borough Water Department	2 wells (Cf-18, 19)
	Craft Water Supply	2 springs[1]
	Glen Hope Water Association	1 spring
	Pike Township Municipal Authority	2 springs[1]
	Wallaceton Municipal Authority	1 spring
	West Decatur Authority	2 springs

Clinton	Beech Creek Water Authority	1 well (Cn-77)[1]
	Chatham Water Company	1 well (Cn-81)[1]
	Loganton Borough Water Company	5 springs
	Rote Mutual Water Company	2 springs
	Suburban Lock Haven Water Authority	2 wells (Cn-84, 85)[1]
Indiana	Cherry Tree Borough	3 springs[1]
	Glen Campbell Borough	1 well (In-40)
Lycoming	Allenwood Federal Prison	2 wells (Ly-266, 267)
	Bella Vista Village Water Company	1 well (Ly-176)
	Hughesville Borough Water Company	2 wells (Ly-99, 249)
	Jersey Shore Water Company	3 wells (Cn-62, 63, 69)[1]
	Montgomery Water and Sewer Authority	2 wells (Ly-228, 229)
	Montoursville Borough Water Works	4 wells (Ly-177, 178, 211, 212)[1]
	Muncy Borough Water Department	5 wells (Ly-120, 121, 122, 233, 301)[1]
	Picture Rocks Water Company, Inc.	1 well (Ly-83)
	Ralston Water and Power Company, Inc.	1 well (Ly-476), 1 spring
	Roaring Branch Water Association	2 wells (Ly-575, 678)[1]
	State Correctional Institute at Muncy	2 wells (Ly-12, 13), 3 springs
	Twin Hills Village	1 well (Ly-475)
	Williamsport Municipal Water Authority	9 wells (Ly-26, 33, 51, 68, 84, 183, 184, 574)
Northumberland	McEwensville Borough Water System	1 well (Nu-248)
	Turbotville Water Company	1 spring
Potter	Austin Borough Water	2 wells (Po-63), 5 springs
	Galeton-Eldrid Water Company	1 well (Po-76)[1]
Sullivan	Dushore Borough Water Company	3 wells (Su-35, 41, 42)[1]
	Laporte Borough Municipal Water System	1 well (Su-69), 1 spring
Tioga	Blossburg Water Company	1 well (Ti-122)[1]
	Bloss Township Water Authority	1 spring[1]
	Elkland Borough Water Company	2 wells (Ti-151, 153)
	Knoxville Borough Water Department	2 wells

Table 3. *(Continued)*

County	Water supplier	Groundwater sources
Tioga	Lawrenceville Water and Sewer Authority	2 wells (Ti-214, 215)
	Nelson Township Authority	2 wells
	Osceola Water Association	2 wells (Ti-12, 213)
	Tioga Borough Municipal Authority	2 wells (Ti-145, 146)
	Watrous Water Association Inc.	2 springs
	Wellsboro Borough Water Company	5 wells, 12 springs[1]
	Westfield Borough Water Works	2 wells (Ti-66, 144), 2 springs
Union	Gregg Township Authority	1 well (Un-193)
	Mifflinburg Borough Water Department	1 spring[1]

[1] Also have surface-water sources.

Table 4. *Industries Using More than 100,000 Gallons per Day of Groundwater*

County	Company	Source
Bradford	Ingersoll-Rand Co., Athens	2 wells (Br-108, 221)
Centre	Marblehead Lime Co., Bellefonte	1 well, 1 spring
	Cerro Metal Products Div., Bellefonte	2 springs
Clinton	Jersey Shore Steel Co., Jersey Shore	1 well (Cn-90)
Lycoming	Frank Wolynic and Son, Inc., Williamsport	1 well (Ly-677)
	GTE Sylvania, Inc., Muncy	2 wells (Ly-287, 288)
Northumberland	Mandata Poultry Co., Herndon	8 wells (Nu-220, 221, 222, 223, 224, 225, 228, 229)
Tioga	Eberle Tanning Co., Westfield	3 wells (Ti-61, 217, 218)
Union	National Gypsum Co., Gold Bond Building Products Div., New Columbia	3 wells (Un-119, 120, 121)

Table 5. *Mineral Extraction and Processing Sites Withdrawing More than 100,000 Gallons of Water per Day*

County	Name	Withdrawal (gal/d)	Source(s)
Cambria	Barnes and Tucker Co., Lancashire Mine No. 20	200,000	Mine water
	Barnes and Tucker Co., Lancashire Mine No. 25	200,000	Mine water
	Greenwich Collieries, Greenwich Preparation Plant	237,000	Wells, mine water
Centre	Rushton Mining Corp.	200,000	Mine water
	Warner Company, Belle Mine	276,000	Mine water
Northumberland	Faylor-Middlecreek, Inc., Winfield Quarry	260,000	Wells, mine water

HYDROLOGY

The occurrence and interrelation of water in the atmosphere and on the land surface, in addition to the water in the subsurface, must be described and quantified in order to properly utilize and manage the groundwater re-

source. This interrelation between atmospheric, surface, and underground water is collectively called the hydrologic cycle and is shown diagrammatically in Figure 3.

The diagram indicates that essentially all of the water in the basin enters as precipitation and leaves as either water vapor to the atmosphere (evapotranspiration), surface runoff, or groundwater discharge to streams. Average annual amounts shown in the diagram are approximations and are not intended for use in detailed planning. A thorough discussion of the amount and variation of the components in the cycle is given in the sections that follow.

WATER BUDGETS

A water budget is a quantitative expression of the major components of the hydrologic cycle. Water that enters a basin as precipitation is balanced

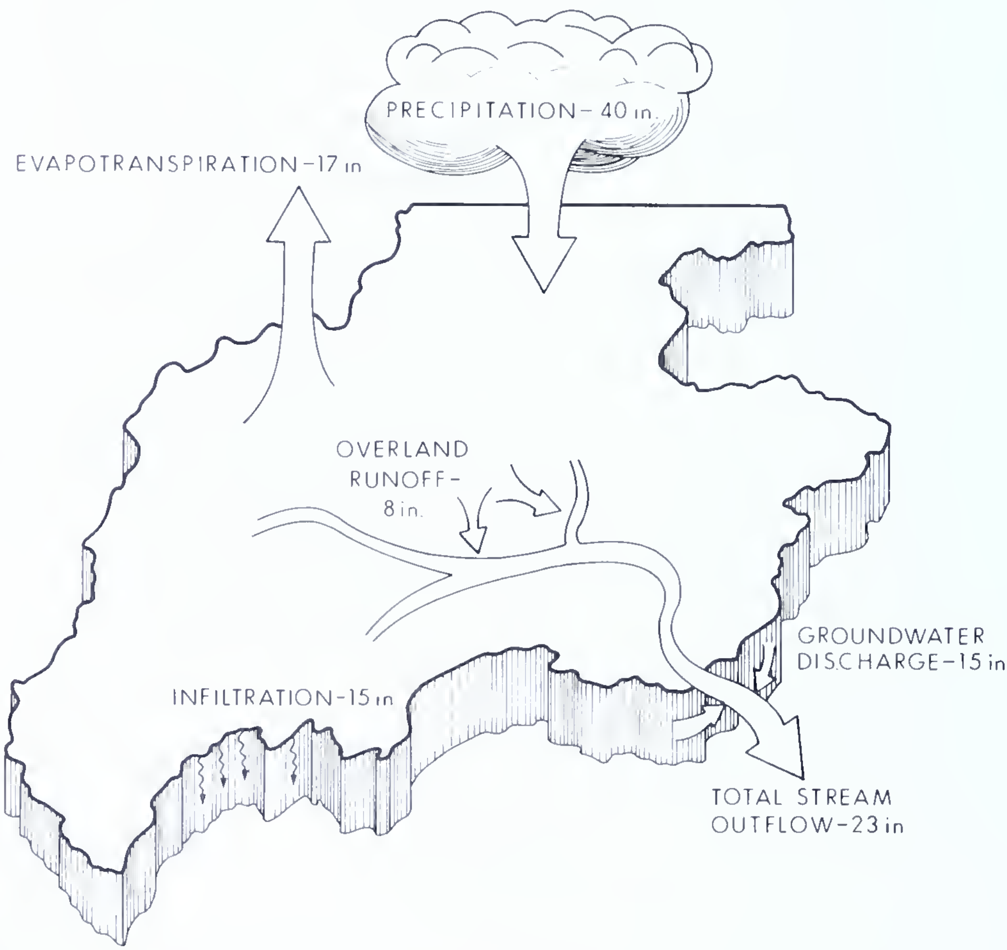


Figure 3. The annual hydrologic cycle and water budget for the West Branch Susquehanna River basin.

against water that leaves a basin as evapotranspiration and streamflow. This balance can be expressed in a simplified equation as follows:

$$P = R_s + R_g + ET \pm \Delta S$$

where

P = precipitation

R_g = groundwater discharge to streams

R_s = surface or direct runoff

ET = water lost by evaporation and transpiration

ΔS = change in amount of water in storage ($R_g + R_s$ = total streamflow)

Three subbasins having diverse geology and topography were selected for water-budget analysis (Figure 4). The West Branch Susquehanna River as measured at Karthaus was selected because it drains relatively flat lying sandstone and shale in the Appalachian Plateaus province. Flow from carbonate rocks in the Valley and Ridge province was characterized by data from the Spring Creek basin. The third basin analyzed, the Lycoming Creek basin, is similar to the West Branch in geology and physiography except that it contains thick unconsolidated deposits along major tributaries.

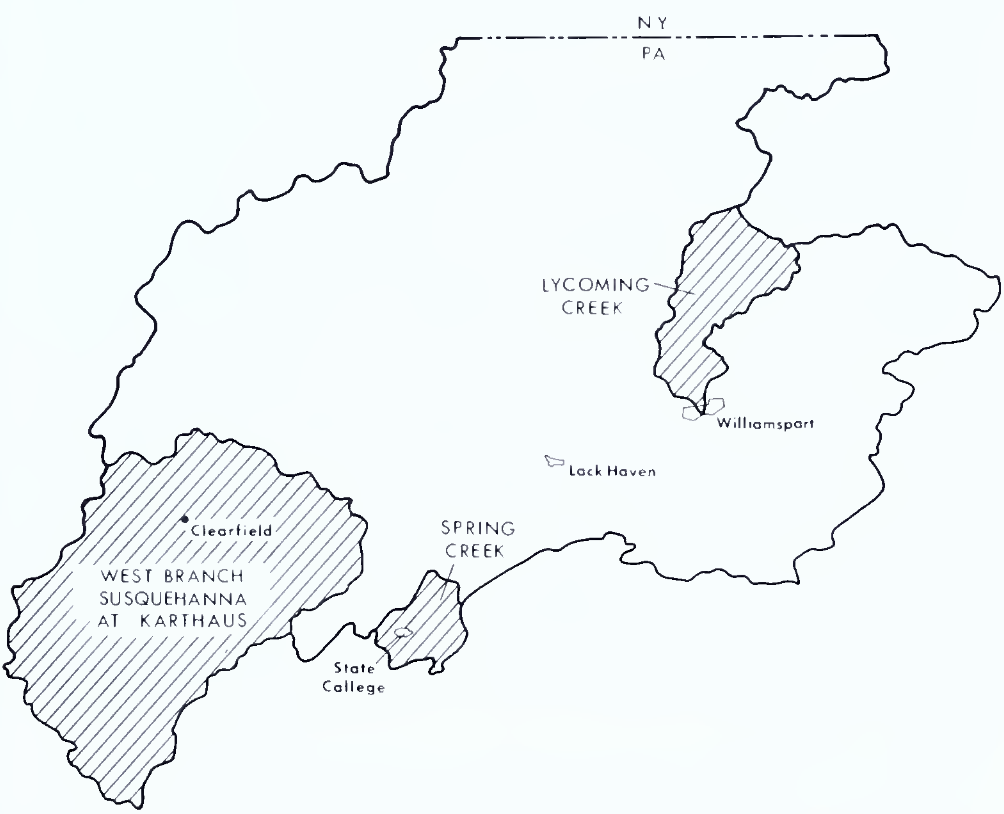


Figure 4. Map showing the locations of the drainage basins utilized for the water-budget analysis.

The results of the water-budget analyses are presented in Table 6. The time period selected for analysis (1961–80) was utilized because it incorporates one of the driest periods of record (the early 60's) and one of the wettest periods of record (the 70's). Thus, the table gives nearly the full range of expected water-budget values.

In the subsequent sections, fairly detailed descriptions are given of each major hydrologic component listed in Table 6; these are followed by a section in which baseflow is related to the areal availability of groundwater.

PRECIPITATION (P)

Records of precipitation from the weather station that was most representative of a particular basin were used in the water-budget analysis. These data were also used to prepare a map showing average annual precipitation within the basins (Figure 5). Average precipitation ranges from a high of more than 45 inches in central Sullivan County to a low of less than 34 inches near the New York border. The weighted average for the complete area is about 40 inches.

Use of average annual precipitation for water resource planning, however, can be somewhat misleading. Figure 6 is a frequency plot of annual precipitation at State College, the location of the weather station used for the Spring Creek basin water budget. The plot shows that 42 percent of the years had precipitation amounts less than the mean, and more than 25 percent had precipitation amounts at least 10 percent less than the mean (about 34 inches). During many years in which precipitation levels were below 34 inches, groundwater shortages occurred in heavily stressed parts of the aquifers within the Spring Creek basin (for example, in the early 60's and 1980–81). This suggests that water resource planning based on average annual precipitation could result in groundwater shortages about 25 percent of the time.

A frequency plot of annual precipitation can be used to estimate the recurrence interval of a water budget of a given magnitude (the recurrence interval is the inverse of the frequency expressed as a percentage, multiplied by 100). For example, about 10 percent of the time precipitation at State College is less than 30 inches, which is approximately the precipitation amount for 1963 and 1966 in the Spring Creek basin. This is equivalent to a 10-year recurrence interval, which is the interval at which, on the average, a water budget of similar magnitude to 1963 and 1966 might be expected to occur.

STREAMFLOW (R_g + R_s)

Streamflow was obtained from the records of the U.S. Geological Survey for the three gaging stations listed in Table 6. These stations were selected

Table 6. *Water Budgets for Major Stream Basins*

Water year	Precipitation P (inches)	=	Surface runoff R_s (inches)	+	Groundwater discharge R_g (inches)	+	Evapotranspiration ET (inches)
			West Branch Susquehanna at Karthaus				
1961	35.27	=	6.63	+	14.00	+	14.64
1962	38.30	=	6.45	+	12.92	+	18.93
1963	33.85	=	4.66	+	11.83	+	17.36
1964	40.03	=	8.61	+	12.50	+	18.92
1965	37.40	=	4.18	+	12.35	+	20.87
1966	41.28	=	5.65	+	11.45	+	24.18
1967	44.66	=	7.48	+	15.00	+	22.18
1968	39.24	=	6.74	+	14.38	+	18.12
1969	34.63	=	5.37	+	10.69	+	18.57
1970	43.48	=	7.22	+	16.13	+	20.13
1971	41.10	=	8.16	+	18.63	+	14.31
1972	45.97	=	12.20	+	21.06	+	12.71
1973	46.38	=	8.28	+	18.80	+	19.30
1974	47.03	=	9.03	+	18.24	+	19.76
1975	48.29	=	10.24	+	18.85	+	19.20
1976	39.06	=	6.22	+	15.72	+	17.12
1977	49.73	=	8.69	+	16.59	+	24.45
1978	47.19	=	9.37	+	20.80	+	17.02
1979	50.94	=	9.60	+	18.40	+	22.94
1980	41.67	=	7.83	+	16.77	+	17.07
Long-term avg. (1961–80)	42.28	=	7.63	+	15.76	+	18.89

Table 6. *(Continued)*

Water year	Precipitation P (inches)	=	Surface runoff R_s (inches)	+	Groundwater discharge R_g (inches)	+	Evapotranspiration ET (inches)
			Spring Creek near Axemann				
1961	35.78	=	1.00	+	11.35	+	23.43
1962	29.79	=	1.52	+	10.79	+	17.66
1963	30.03	=	.53	+	7.59	+	21.91
1964	32.98	=	1.05	+	9.57	+	22.36
1965	27.72	=	.47	+	6.30	+	20.95
1966	30.16	=	.54	+	6.33	+	23.29
1967	39.42	=	.86	+	10.02	+	28.54
1968	32.02	=	.71	+	9.64	+	21.67
1969	32.15	=	.64	+	6.65	+	24.86
1970	37.46	=	1.40	+	11.29	+	24.77
1971	40.34	=	1.40	+	14.36	+	24.58
1972	42.72	=	3.32	+	16.32	+	23.07
1973	40.20	=	1.50	+	16.55	+	22.15
1974	39.88	=	1.53	+	14.37	+	23.98
1975	45.03	=	1.72	+	15.86	+	27.45
1976	41.02	=	1.91	+	15.28	+	23.83
1977	41.94	=	1.67	+	14.64	+	25.63
1978	45.13	=	3.39	+	21.75	+	20.00
1979	42.13	=	3.04	+	16.53	+	22.56
1980	33.44	=	2.12	+	18.13	+	13.19
Long-term avg. (1961–80)	36.98	=	1.52	+	12.67	+	22.79

Lycoming Creek near Trout Run, Pa.

1961	34.94	=	6.13	+	13.77	+	15.04
1962	35.14	=	5.36	+	10.89	+	18.89
1963	32.29	=	5.38	+	11.97	+	14.94
1964	31.66	=	6.63	+	11.75	+	13.28
1965	29.44	=	2.67	+	7.08	+	19.69
1966	32.09	=	4.85	+	12.64	+	14.60
1967	36.77	=	6.52	+	15.07	+	15.18
1968	36.13	=	6.84	+	16.31	+	12.98
1969	32.20	=	4.97	+	10.42	+	16.81
1970	37.68	=	6.51	+	15.91	+	15.26
1971	39.20	=	7.83	+	16.45	+	14.92
1972	49.92	=	14.06	+	22.07	+	13.79
1973	48.50	=	11.18	+	21.28	+	16.04
1974	43.62	=	8.72	+	17.97	+	16.93
1975	40.84	=	11.22	+	14.84	+	14.79
1976	39.40	=	8.83	+	17.75	+	12.82
1977	39.96	=	8.70	+	15.81	+	15.45
1978	55.34	=	14.28	+	24.24	+	16.82
1979	41.31	=	9.01	+	16.08	+	16.22
1980	36.17	=	6.25	+	14.91	+	15.01
Long-term avg. (1961–80)	38.63	=	7.80	+	15.36	+	15.47

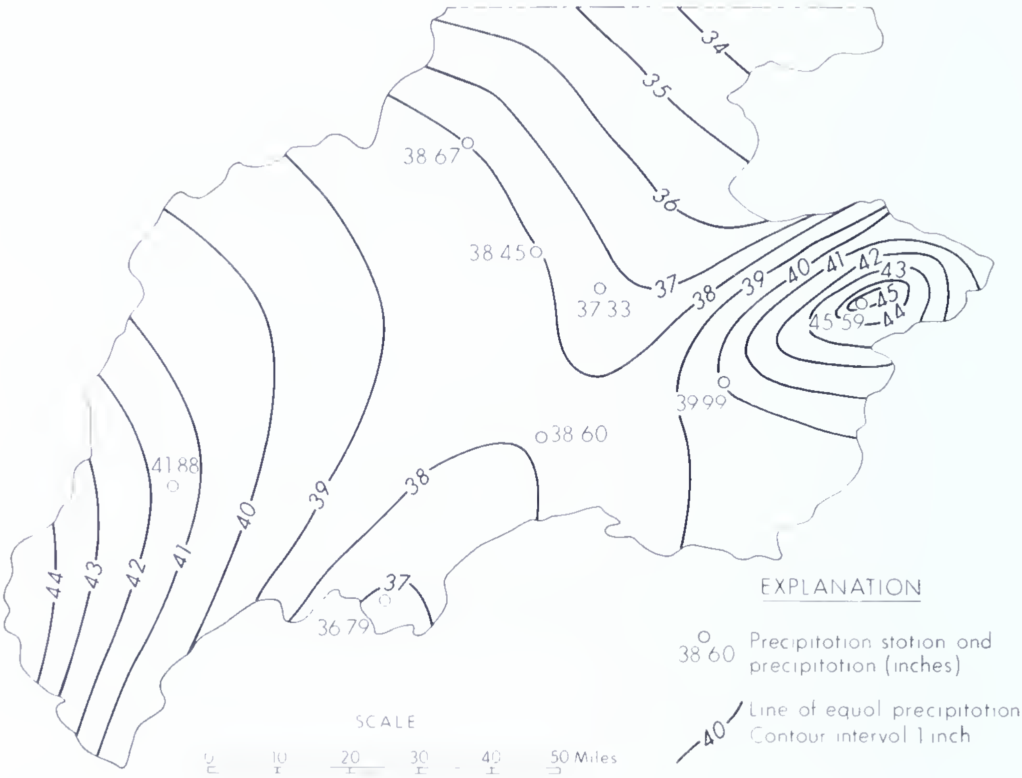


Figure 5. Average annual precipitation in the West Branch Susquehanna River basin (based on data from U.S. Department of Commerce, 1941–70).

on the basis of geology and physiography of their respective drainage basins, as described previously. The groundwater and surface-flow components of streamflow were separated on hydrographs using conventional methods.

On the average, total runoff accounts for about 55 to 60 percent of annual precipitation (23.2 to 23.4 inches) in the two basins draining the Appalachian Plateaus province, and about 38 percent in the Spring Creek basin (14.2 inches). The lower percent in the Spring Creek basin is probably due to an approximate 3 to 4 °F higher average summer temperature, which results in a larger quantity of water lost to evapotranspiration.

Baseflow, the groundwater contribution to streamflow, accounts for a higher percentage of streamflow in the Spring Creek basin than in the other two (about 89 percent versus 67 percent). This is because the underlying bedrock consists primarily of carbonates as opposed to sandstone and shale. The carbonate rocks, limestone and dolomite, have a much larger storage capacity, are more easily recharged, and thus can sustain higher baseflows.

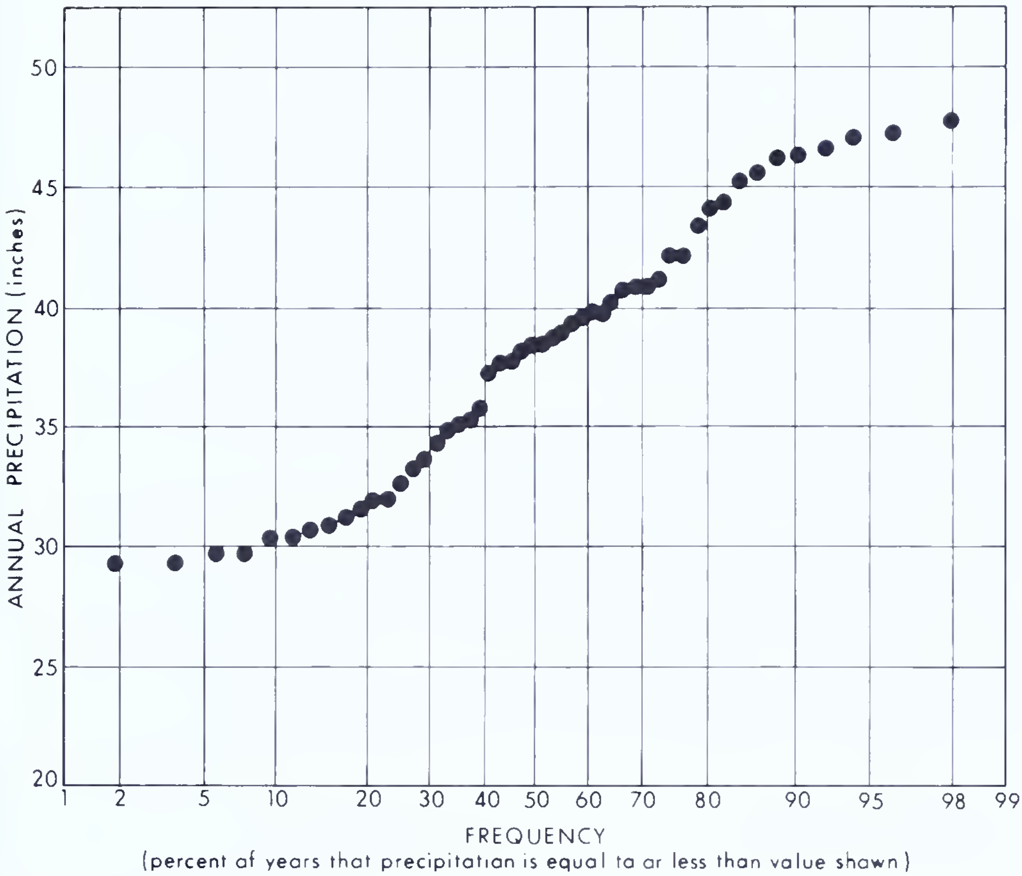


Figure 6. Percent frequency distribution of annual precipitation at State College (1932–81).

Figures 7, 8, and 9 are frequency plots of annual runoff as measured at their respective gages. Such plots are useful in predicting the probability of occurrence of annual flows. Note that there is a close correspondence between the plots for the two basins located in the Appalachian Plateaus province even though Lycoming Creek has relatively thick alluvium of glacial origin. This suggests that, although important for other reasons, the alluvial deposits contribute only a minor amount to the baseflow of the creek.

The frequency plot for Spring Creek is much flatter than the others, which indicates a smaller range of flows and therefore a more reliable resource. Again this is a result of the preponderance of carbonate rock in the basin.

Frequency plots of annual baseflow were generated by correlating the data in Table 6 and the total runoff plot. Existing groundwater use within a basin can be compared with baseflow values on the frequency curve to estimate the potential for, and frequency of, water shortages. For example, water use in the Lycoming Creek basin was compared to the baseflow curve.

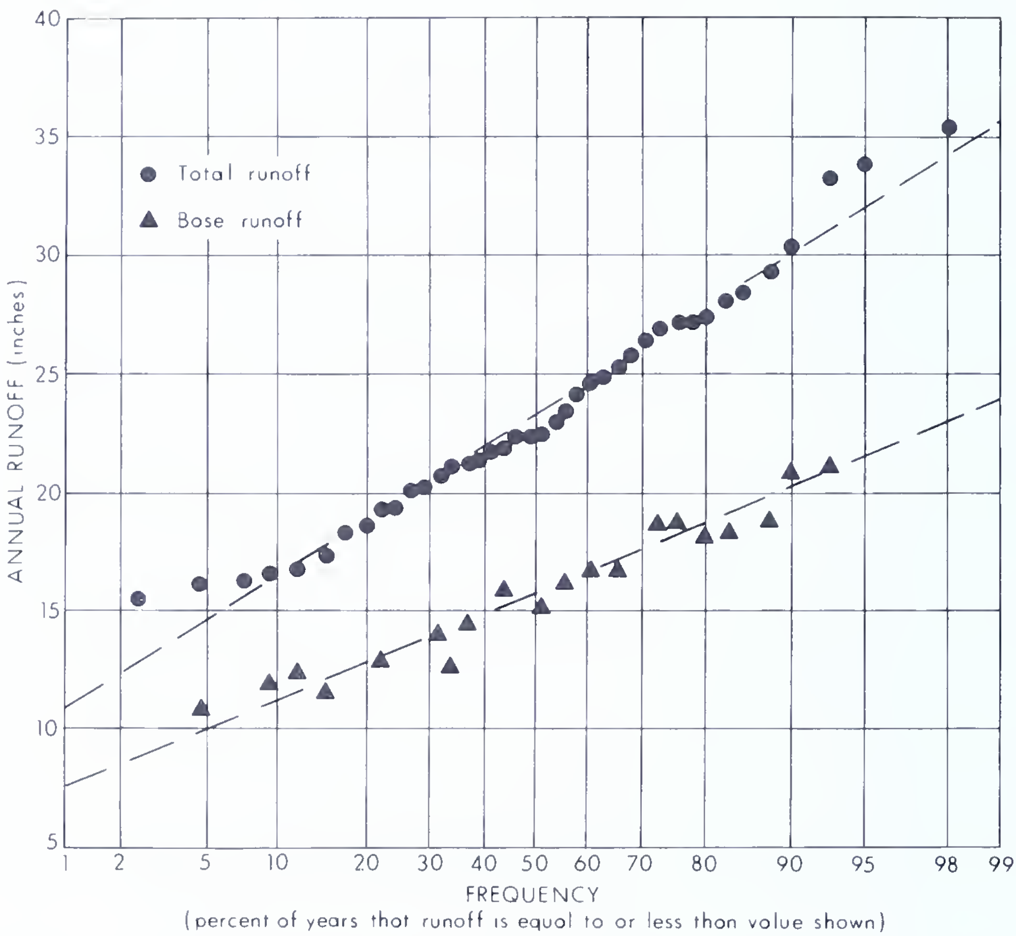


Figure 7. Percent frequency distribution of annual runoff from the West Branch Susquehanna River at Karthaus (1941–80).

The comparison indicated that the current level of use constitutes less than one percent of the lowest measured base runoff on the chart. Thus the potential for a widespread groundwater shortage in this basin is minimal.

Data were not available to make the comparison between the baseflow-frequency curve and water use for the two other basins analyzed. It is likely that the comparison for the West Branch at Karthaus would have the same result as for Lycoming Creek because of a similar low level of water use there. The high level of water use and past experiences with water shortages suggest that an intersection with the curve exists for the Spring Creek basin; however, this needs to be verified with detailed data.

EVAPOTRANSPIRATION (ET)

Evapotranspiration (ET) is a collective term used to describe the withdrawal of water from water bodies, wetted surfaces, and moist soil by direct

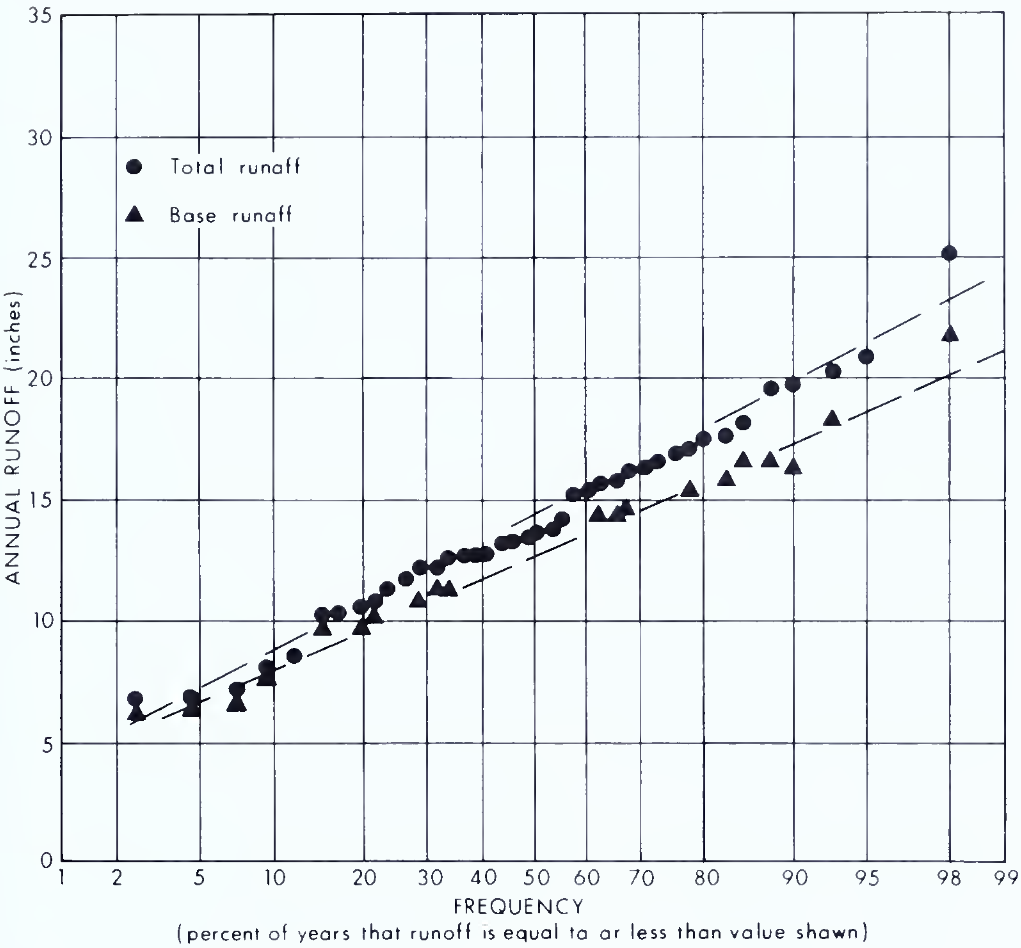


Figure 8. Percent frequency distribution of annual runoff from Spring Creek near Axemann, Pennsylvania (1941–80).

evaporation, and from living plants by the process of transpiration. The amount of ET varies with the length of the growing season, average temperature, and amount and timing of precipitation and humidity. Consumptive losses to ET are at a minimum between the first killing frost in the fall and the active resumption of plant growth in the spring. Most of the recharge to the groundwater system occurs during this time period, as shown in Figure 10.

The amount of water lost to ET was estimated by evaluating the difference between precipitation and streamflow for the 20-year budget periods. Any annual changes in groundwater storage (ΔS) are also included in this computed difference. However, increases or decreases in storage over the 20-year period essentially balance one another and thus can be considered as negligible for long-term averages.

The average water loss to ET ranged from a low of 15.5 inches in the Lycoming Creek basin to a high of 22.8 inches in the Spring Creek basin. This

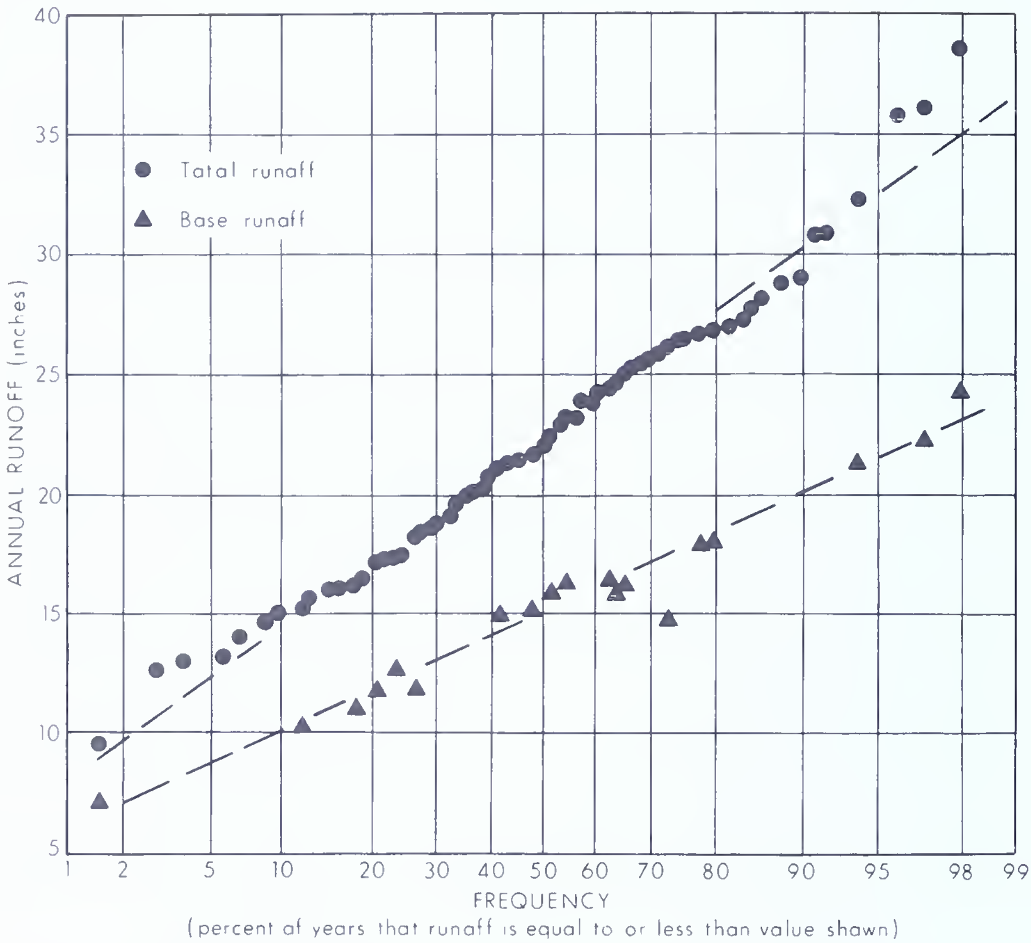


Figure 9. Percent frequency distribution of annual runoff from Lycoming Creek near Trout Run, Pennsylvania (1915–80).

difference is primarily caused by the higher average summertime temperature in the Spring Creek basin.

ESTIMATE OF AREAL AVAILABILITY OF GROUNDWATER

Baseflow data can be used to calculate the groundwater discharge per unit of land surface. In essence, the groundwater discharge per unit of land surface is equivalent to groundwater recharge and is a practical estimate of the limits of development for a basin or aquifer. Long-term groundwater withdrawals in excess of the average recharge can cause a progressive lowering of water levels and severely reduce the flow of streams.

Groundwater recharge to the basins underlain by sandstone and shale in the Appalachian Plateaus province averaged about 510 (gal/min)/mi^2

(gallons per minute per square mile). The calculated minimum recharge, 230 (gal/min)/mi^2, which is the level of recharge to these rocks that might be expected in about 1 of 70 years, occurred in 1965.

The basin underlain by carbonate rock had an average recharge of 420 (gal/min)/mi^2 and a minimum of 210 (gal/min)/mi^2, also in 1965. These are probably representative values for all of the carbonate rocks in the northern Valley and Ridge province. No recharge values were obtained for the combined rock types in this physiographic province; however, in the Juniata River basin to the south, a range of 280 to 380 (gal/min)/mi^2 was obtained (Taylor and others, 1982).

HYDROGEOLOGY

GEOLOGIC SETTING

Most of the West Branch Susquehanna River basin lies within the Appalachian Plateaus physiographic province, which consists of essentially flat upland areas that are deeply dissected by many steep-walled, narrow valleys. The southern part of the area is in the Appalachian Mountain section of the Valley and Ridge physiographic province. Here the topography is characterized by an approximately northeast-southwest trending succession of narrow, steep-sided ridges and valleys.

The basin is underlain by a thick sequence of sedimentary rocks consisting chiefly of sandstone, siltstone, shale, and limestone. Economically important deposits of coal are present in the Appalachian Plateaus area. The sequence of rocks consists essentially of a lower calcareous unit overlain by three alternating noncalcareous and calcareous units that were deposited more or less continuously from the Cambrian (520 ± million years ago) through the Pennsylvanian Periods (300 ± million years ago).

Near the end of the Paleozoic Era the long period of subsidence and sediment deposition ended with the onset of regional tectonic (mountain-building) forces that caused the rock layers to be uplifted and, in the southern part of the area, folded and faulted. Erosion of these large folds and uplifted areas produced the existing landscape.

The topography of the northeastern part of the basin has been modified by at least three glacial advances that occurred between 12,500 and 75,000 years ago. Thick deposits of till cover parts of this area, and many streams contain thick outwash deposits.

OCCURRENCE AND MOVEMENT OF GROUNDWATER

The portion of precipitation that does not run off or is not lost through evapotranspiration infiltrates the soil and moves downward through the soil and rock until it reaches the water table, below which all of the intercon-

nected voids are filled with water. After reaching this saturated zone, the water moves slowly downward and laterally toward lower altitudes (or lower hydraulic potential) and eventually returns to the land surface, either from springs or channel seepage, to provide the baseflow to streams.

The water table fluctuates according to the relative amounts and rates of recharge to and discharge from the groundwater system. Figure 10 shows the mean monthly temperature, precipitation, and representative groundwater levels near Williamsport, Lycoming County. Precipitation ranges from slightly more than 2.5 inches in January to over 4 inches in July. However, the water level in well Ly-112 shows only a marginal relationship to precipitation, whereas the level appears to be inversely related to temperature. This demonstrates the effect of evapotranspiration on recharge. Most groundwater recharge occurs after the spring thaw and prior to the onset of

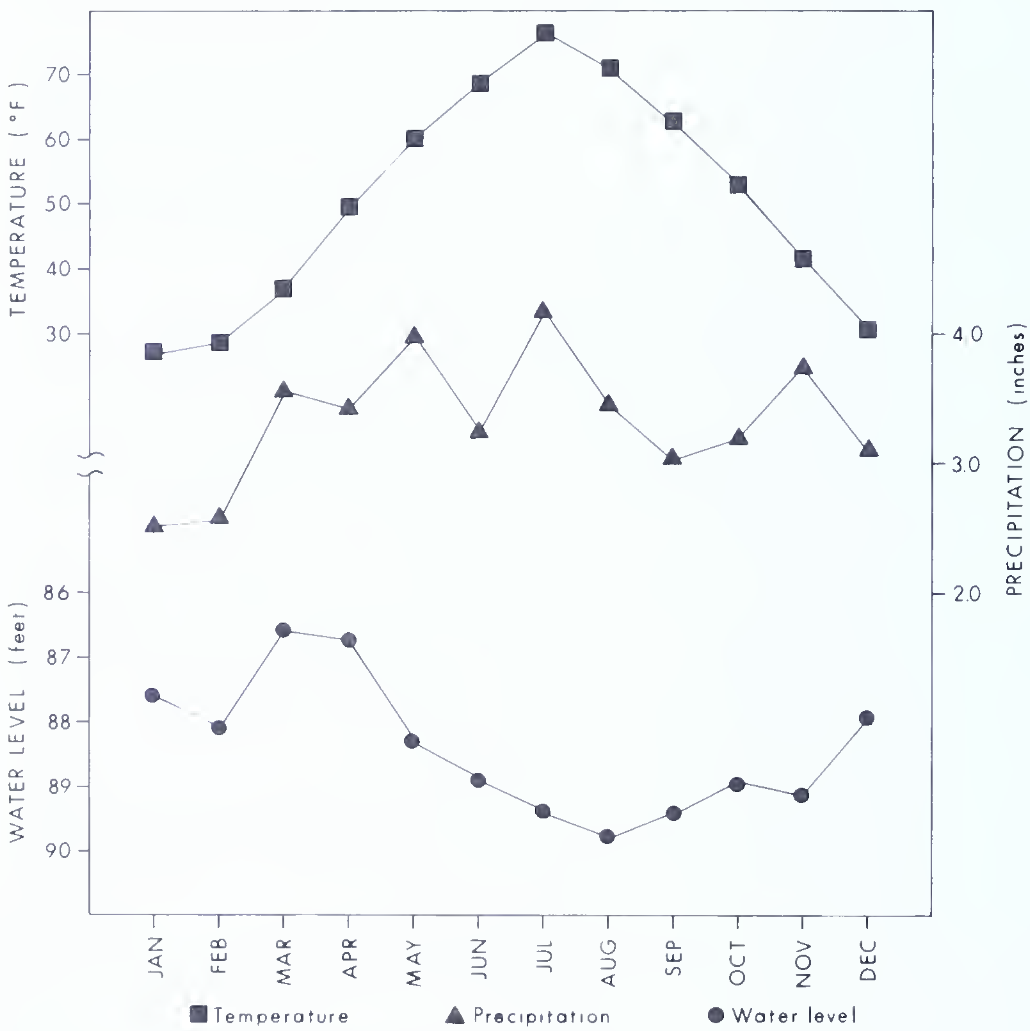


Figure 10. Mean temperature and precipitation near Williamsport, and mean water level in well Ly-112.

vigorous plant growth in April and May, and after the first killing frost in October and before the ground freezes in December. During the summer there is normally a steady decline in water levels because large evapotranspiration losses allow very little recharge to reach the saturated zone. Thus the seasonal variation in precipitation is more critical to the groundwater resource than the annual total. A dry spring or fall may have considerably more effect on the resource than a dry summer.

A hydrograph of the Lycoming County observation well (Ly-112) for the period 1975 through 1980 is included to show typical fluctuations in the annual pattern of water levels (Figure 11). Note the steady decline in the water level from May to September 1980; this represents the early stages of the 1980-81 drought. Although the July 1980 level in this well was in the normal range, the almost total lack of recharge in August and especially September triggered the onset of this relatively short term, but costly, drought.

The water table in the basin is subparallel to the land surface; water levels under hills are at higher altitudes than those in valleys. Water levels mea-

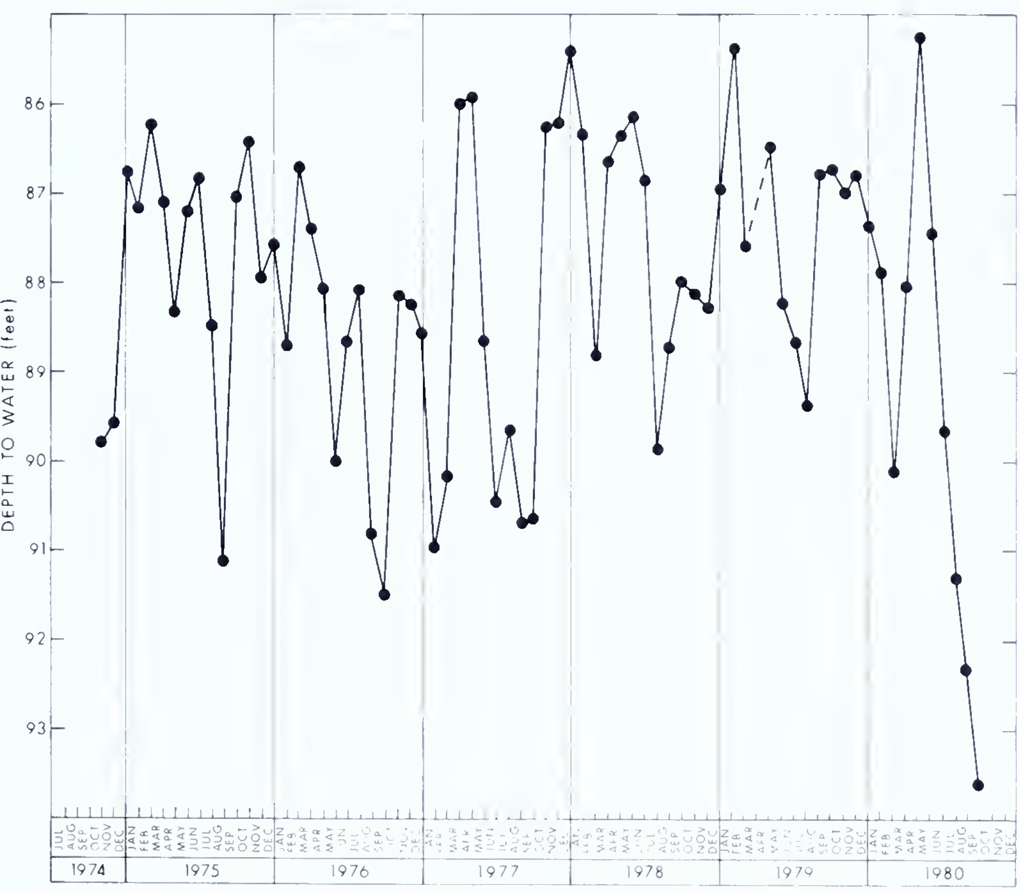


Figure 11. Mean monthly depth to water in well Ly-112 (1974-80).

sured in domestic wells in the basin have a median depth of 18 feet in valleys (335 wells), 55 feet under hillsides (583 wells), and 80 feet under hilltops (112 wells). Depth to water also varies with rock type. The shallowest median water levels were obtained in the Hamilton Group (15 feet), which consists mainly of comparatively low permeability shale. Wells located in a group of formations consisting chiefly of limestone and dolomite (Coburn Formation through Loysburg Formation) had the deepest median water level of 107 feet.

FACTORS THAT INFLUENCE THE YIELD OF WELLS

The yield of a well depends largely on the size, number, distribution, and degree of interconnection of the water-filled openings penetrated by the well. These openings or water-bearing zones may be fractures, bedding-plane partings, or small voids between the grains that make up the rock.

Table 7 is a summary of available data on water-bearing zones for the report area. The deepest reported zone for each rock unit is also listed. In the table, the numerator of the fraction indicates the number of reported water-bearing zones and the denominator indicates the number of wells penetrating a particular depth range. The denominator of the shallowest range indicates the total number of wells in that formation for which data on depth to water-bearing zones were obtained. Thus, data were obtained for 222 wells in the Catskill Formation. The value (or magnitude) of the fraction gives the relative abundance of zones with depth. In the Catskill, zones were most abundant in the 51- to 100-foot interval; about 63 percent of the wells penetrating this interval encountered a water-bearing zone. The data given in the table for the shallowest interval (0 to 50 feet) are somewhat misleading because the casing length and static water level were not taken into account. However, the data probably indicate the abundance of usable zones in that interval.

Geologic factors that control the type and distribution of water-bearing zones, and thus well yields, are described in the following three sections.

Lithology

Rock type is the most important factor in determining well yield because the occurrence of both primary and secondary porosity and permeability is ultimately controlled by lithology.

Lithological factors that control development of secondary openings consist of rock susceptibility to solution, rock susceptibility to fracturing, and the size and spacing of bedding-plane partings.

Enlargement of primary and secondary openings by solution occurs mainly in the carbonate rocks, limestone and dolomite. Occasionally the permeability of sandstone units has been increased by the solution removal

Table 7. *Summary of Data on Water-Bearing Zones*

Ratio of number of water-bearing zones of specified depth range (numerator) to number of wells penetrating this range (denominator)

Group or formation	Depth range (feet) 0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500	>500	Deepest zone
Glenshaw Formation	16/27	14/22	4/8	3/7	0/5	3/3	0/1	0/1	0/1	0/1	0/1	300
Allegheny Group	10/29	17/24	8/16	7/9	2/2	0/1	—	—	—	—	—	220
Pottsville Group	3/15	8/12	3/6	2/4	1/2	1/1	—	—	—	—	—	280
Mauch Chunk Formation	1/6	2/6	0/6	4/6	2/4	1/3	1/2	0/2	1/1	—	—	411
Burgoon Sandstone	10/29	19/25	9/16	5/11	5/7	0/3	2/3	3/2	1/2	1/2	—	465
Huntley Mountain Formation	2/24	13/23	7/14	8/11	6/7	0/2	0/2	0/2	0/2	1/2	—	470
Catskill Formation	57/222	126/201	75/140	54/95	24/51	8/31	8/22	0/8	0/3	0/3	1/3	535
Trimmers Rock Formation	2/32	20/32	14/24	5/18	4/13	3/10	1/8	2/7	0/3	0/2	0/1	387
Lock Haven Formation	48/154	93/146	60/101	37/59	12/27	7/17	0/7	2/6	0/2	0/1	0/1	369
Brallier and Harrell Formations, undivided	8/29	13/28	12/20	4/12	2/6	2/4	1/1	—	—	—	—	313
Hamilton Group	22/75	44/68	27/48	18/37	9/19	7/13	0/6	0/4	0/2	—	—	300

Table 7. *(Continued)*

Group or formation	Ratio of number of water-bearing zones of specified depth range (numerator) to number of wells penetrating this range (denominator)											Deepest zone
	Depth range (feet)											
	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500	>500	
Onondaga and Old Port Formations, undivided	11/37	20/29	16/20	3/6	0/3	3/3	3/2	—	—	—	—	330
Keyser and Tonoloway Formations, undivided	5/33	11/29	11/23	7/15	6/10	3/7	1/3	0/3	0/3	0/3	3/3	690
Wills Creek Formation	4/23	12/11	12/14	6/6	0/1	1/1	—	—	—	—	—	300
Bloomsburg and Mifflintown Formations, undivided	2/40	22/39	19/30	16/21	2/8	3/4	0/4	1/1	—	—	—	369
Clinton Group	0/20	9/20	14/16	6/11	5/6	1/2	0/1	—	—	—	—	280
Juniata Formation	0/10	8/10	1/8	1/6	1/3	—	—	—	—	—	—	245
Bald Eagle Formation	0/12	0/12	1/9	3/10	0/6	3/4	2/4	1/2	—	—	—	370
Reedsville Formation	3/9	6/8	4/6	3/5	3/4	0/2	1/2	—	—	—	—	365
Coburn Formation through Loysburg Formation, undivided	6/39	5/35	10/38	16/30	12/20	2/9	6/8	0/2	1/1	—	—	405

Bellefonte and Axemann Formations, undivided	6/40	16/38	8/30	15/25	10/16	4/8	4/5	0/2	1/2	—	—	420
Nittany Formation	3/14	6/14	5/12	3/9	3/9	3/8	3/6	0/3	1/1	0/1	—	405
Stonehenge/Larke Formation	0/5	0/5	0/5	0/5	3/5	1/2	1/1	—	—	—	—	310
Gatesburg Formation	1/3	1/3	1/2	1/1	1/1	—	—	—	—	—	—	212

of calcite cement from the mineral grains. The Burgoon Sandstone and the Ridgeley Member of the Old Port Formation have been known to exhibit this type of solution.

The size and spacing of fractures are a result of the response of the rock mass to the stresses placed upon it. Certain rock types, such as sandstone and dolomite, are more likely to fail by brittle fracture when stressed and thus will have a greater abundance of fractures. Thin-bedded units within the same rock type will generally have a closer fracture spacing.

Figure 12 is a graph of the percent frequency distribution of nondomestic well yields that have been grouped according to dominant rock type. The importance of lithology is apparent; yields from the carbonate rock types are consistently higher than those from sandstone, which in turn has consistently higher yields than shale.

Topography

Many workers have evaluated the relationship of topography and well yield (Meisler and Becher, 1971; Wood and others, 1972; and Becher and Taylor, 1982, to list a few). All have found a significant relationship between topographic position of the well and well yield, the wells in higher topographic positions (hilltops and hillsides) having smaller yields than those in lower topographic positions (valleys, gullies, and draws).

Valleys and draws are often formed where the bedrock is most susceptible to physical or chemical weathering. In addition to lithologic variations, zones of weakness in rocks, such as along bedding partings, joints, cleavage, and faults, promote rapid weathering and can produce low areas in the topography. These types of geologic features also often form high-permeability zones and can yield significant amounts of water to wells.

Figure 13 is a graph showing the percent frequency distribution of nondomestic well yields that have been grouped according to topographic position. The graph shows that in the lower yield range (less than 20 gal/min), valley wells are about twice as productive as hillside and hilltop wells. In the higher yield range, valley wells are reported to be nearly three times as productive as wells in the other settings. Plots of reported yields of hillside wells produced a steeper curve than those from hilltop wells. Hillside wells are slightly less productive in the low range and somewhat more productive in the higher range. This is probably because the lower yielding hillside wells are located in steep upland slopes, which is generally a poor setting for obtaining adequate yields, and the higher yielding wells are located on lower slopes that are more closely related to the valley environment.

Geologic Structure

Geologic structure, which includes faults, folds, fractures, and orientation of the rock layers (bedrock dip), often has an important influence on the yield of wells. The locations of major structures are shown on Plate 1.

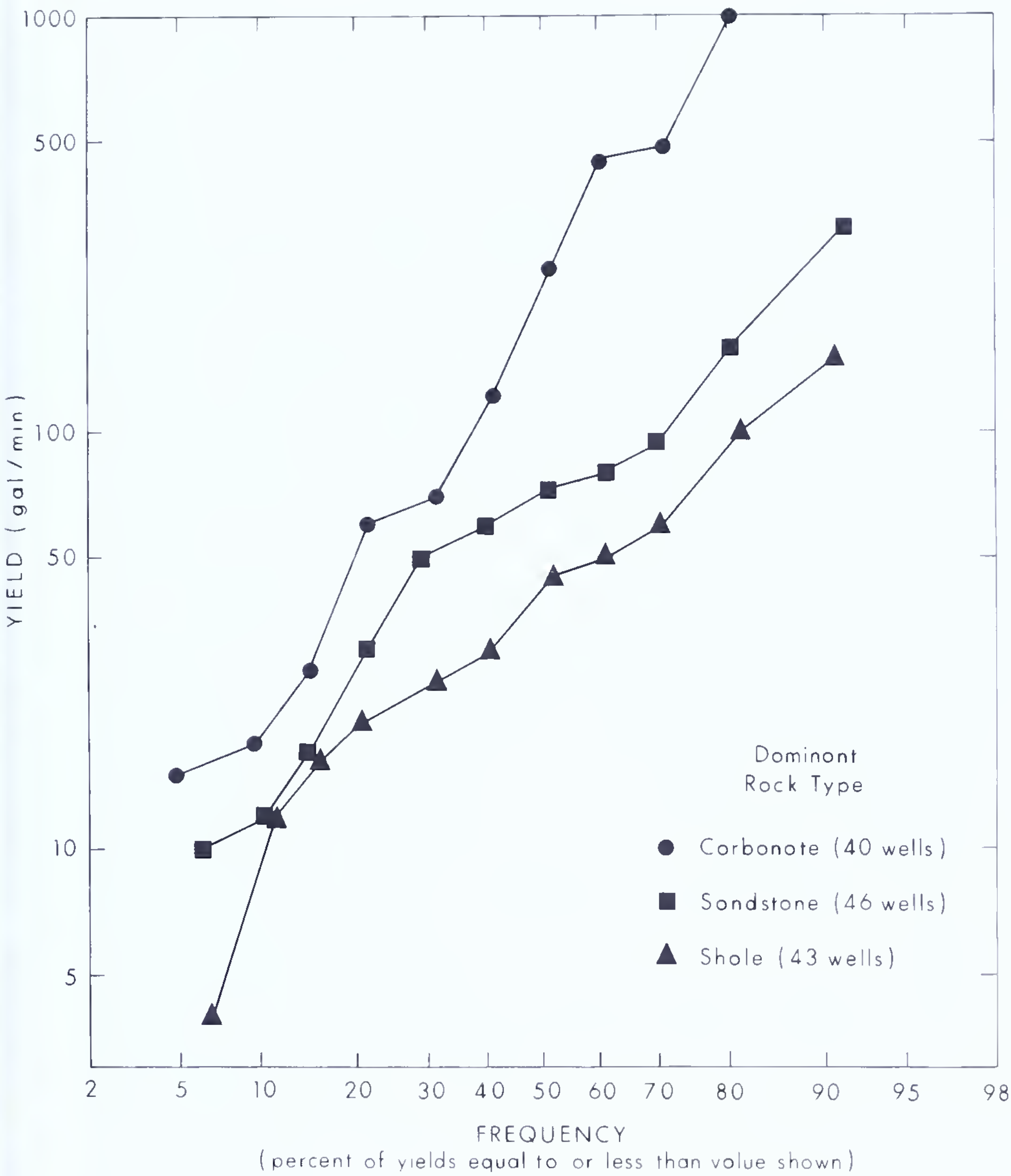


Figure 12. Percent frequency distribution of nondomestic well yields grouped according to dominant rock type.

Faulting may create openings that yield substantial amounts of water. Occasionally, however, faults may be filled with clay, calcite, or quartz and may yield little or no water. This is most common of faults in carbonate rocks.

Fold hinges represent areas where considerable secondary permeability may be developed because of an increase in fracture abundance, occasional well-developed cleavage, and the presence of horizontal or nearly horizontal bedding.

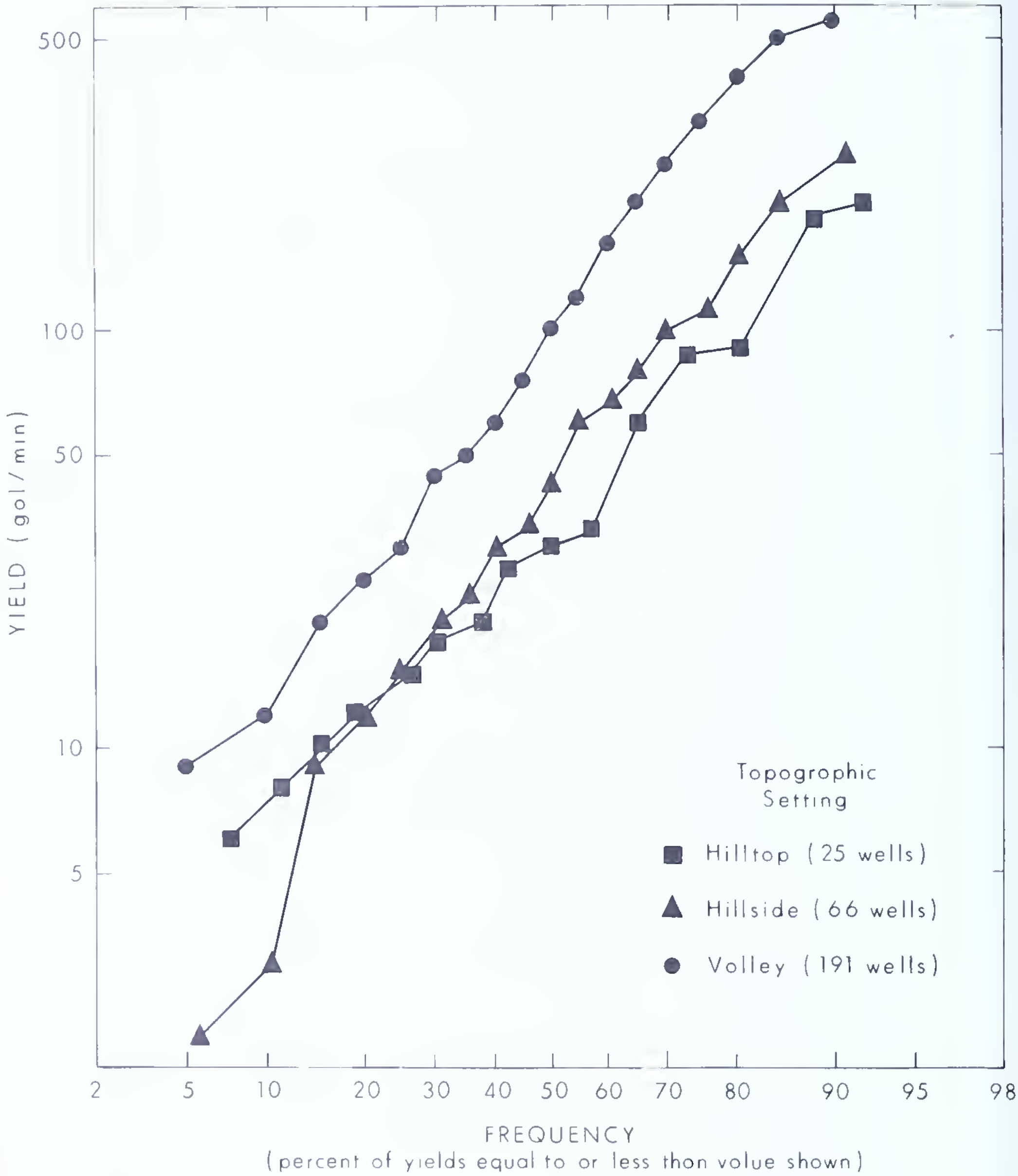


Figure 13. Percent frequency distribution of nondomestic well yields grouped according to topographic position.

Wells that penetrate fractured bedrock yield more water than those that do not penetrate any fractures. Valleys and depressions are frequently localized along fractures or fracture zones; thus wells in these settings have a high probability of penetrating fractured bedrock. Other features reported to be good indicators of fractured bedrock are faults and fracture traces (natural linear features observed on aerial photographs that may be the surface expression of fracture zones in the subsurface).

Well yields generally increase with decreasing dip of strata because more of the openings that normally occur along bedding (bedding-plane partings) are penetrated by a well in nearly horizontal strata than by a well in steeply inclined strata.

GROUNDWATER QUALITY

The amount and type of dissolved mineral matter found in groundwater is determined largely by the composition of the soil and rock through which the water flows and the location of the water in the groundwater flow system. Table 8 is a list of the source and significance of the principal mineral constituents that frequently occur in groundwater.

The quality of groundwater within the West Branch Susquehanna River basin was evaluated using 316 samples collected from wells and springs and analyzed in the laboratory of the Department of Environmental Resources. Results of these analyses are listed in Table 13 and summarized by aquifer in Table 9. A detailed discussion of the water quality by aquifer is given in the section titled "Stratigraphy and Water-Bearing Properties of the Rocks."

Analysis of the water-quality data indicates that the major difference in quality occurs between water from rock units that are either primarily calcareous or primarily noncalcareous. Table 10 summarizes the analyses according to dominant rock type for wells in the Valley and Ridge province.

The median hardness of water from units composed mainly of limestone or calcareous shale is 214 mg/L (milligrams per liter) as compared to a median of only 54 mg/L for water from units composed predominantly of noncalcareous shale, siltstone, and sandstone. Several other constituents are consistently present in greater concentrations in water from the calcareous units: calcium, dissolved solids, magnesium, and nitrate.

Additional information on hardness, specific conductance, and pH was obtained from the 634 field analyses, which are summarized in Table 11. The occurrence of these and other common constituents in groundwater is described in the following sections.

SPECIFIC CONDUCTANCE AND TOTAL DISSOLVED SOLIDS

The specific conductance of groundwater depends on the amount and, to a lesser degree, type of dissolved solids. The relationship of laboratory measurements of dissolved solids to field measurements of specific conductance is shown in Figures 14 and 15. Although there appears to be considerable scatter in the data plotted on the graphs, the mathematical correlation is quite good. Additionally, there is only a minor difference in computed values between the two physiographic provinces for which the data were

Table 8. *Source and Significance of Selected Dissolved Constituents and Properties of Groundwater*[1]

(Concentrations are in milligrams per liter (mg/L) except as indicated)

Constituent or property	Source or cause	Significance[2]
Silica (SiO_2)	Dissolved from practically all rocks and soils (commonly less than 30 mg/L).	Forms hard scale in pipes and boilers. When carried over in steam of high- pressure boilers it forms deposits on blades of turbines.
Aluminum (Al)	Dissolved in small quantities from aluminum-bearing rocks. Acid waters often contain large amounts.[3]	May be troublesome in feed waters by forming scale on boiler tubes. High concentrations generally indicate the presence of acid mine drainage or industrial waste.[3] In natural water, it rarely occurs in concentrations greater than a few tenths of a milligram per liter.
Iron (Fe)	Dissolved from practically all rocks and soils. May also be derived from iron pipes, pumps, and other equipment.	On exposure to air, iron in groundwater oxidizes to a reddish-brown precipitate. More than about 0.3 mg/L stains laundry, porcelain, and utensils reddish brown. Objectionable for food processing, textile processing, beverages, ice manufacturing, brewing, and other processes. Maximum limit recommended for drinking water is 0.3 mg/L.
Manganese (Mn)	Dissolved from many rocks and soils. Often found associated with iron in natural waters, but is not as common as iron.	More than 0.2 mg/L precipitates upon oxidation. Manganese has the same undesirable characteristics as iron but is more difficult to remove. Maximum limit recommended for drinking water is 0.05 mg/L.
Cadmium (Cd)	Dissolved in small quantities from cadmium-bearing rocks. Excessive concentrations are generally from contamination by industrial wastes from metal-plating operations.	Concentrations above 0.01 mg/L may be toxic and are considered grounds for the rejection of a water supply.
Chromium (Cr)	Dissolved in minute quantities from chromium-bearing rocks. Excessive concentrations are generally from contamination by industrial wastes.	Maximum limit recommended for drinking water is 0.05 mg/L.

Lead (Pb)	Dissolved in small quantities from lead-bearing rocks. Less than 0.01 mg/L is generally found in natural waters. Excessive concentrations are caused by contamination from such things as lead plumbing, lead picked up from the atmosphere by rain, and so forth.	Lead is accumulated by the body and causes sickness and even death in excessive concentrations. Maximum limit recommended for drinking water is 0.05 mg/L.
Zinc (Zn)	Dissolved from zinc-bearing rocks. May be dissolved from galvanized pipe and is present in many industrial wastes.	Concentrations greater than 30 mg/L have been known to cause nausea and fainting and may impart a metallic taste and milky appearance to water. Maximum limit recommended for drinking water is 5 mg/L.
Nickel (Ni)	Dissolved from nickel-bearing rocks, commonly associated with iron and manganese.	Nickel is considered to be relatively nontoxic to man.
Arsenic (As)	Dissolved in small quantities from arsenic-bearing rocks. Excessive concentrations are generally due to improper waste-disposal practices. Arsenic is also present in certain insecticides and herbicides.	Concentrations above 0.05 mg/L may be toxic and are considered grounds for rejection of a water supply. The typical concentration in groundwater is less than 0.001 mg/L.
Calcium (Ca) and magnesium (Mg)	Dissolved from practically all rocks and soils, especially from limestone, dolomite, and gypsum.	Cause of most of the hardness and, in combination with bicarbonate, is the cause of scale formation in steam boilers, water heaters, and pipes (see hardness). Water low in calcium and magnesium is desired in electroplating, tanning, dyeing, and textile manufacturing.
Sodium (Na) and potassium (K)	Dissolved from practically all rocks and soils. Sewage and industrial wastes are also major sources.	Concentrations of less than 50 mg/L have little effect on the usefulness of water for most purposes. More than 50 mg/L may cause foaming in steam boilers and limit the use of water for irrigation.
Alkalinity (CO_3, HCO_3)	The bicarbonate ion may result from atmospheric carbon dioxide and the solution of carbon dioxide produced during the decomposition of organic matter in the soil. The major source, however, is from the solution of limestone.	Bicarbonate (HCO_3) and carbonate (CO_3) produce alkalinity. Bicarbonates of calcium and magnesium decompose in steam boilers and hot-water facilities to form scale and release corrosive carbon dioxide gas (see hardness).

Table 8. *(Continued)*

Constituent or property	Source or cause	Significance[2]
Sulfate (SO_4)	Dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Commonly present in some industrial wastes and sewage.	Sulfates in water containing calcium may form hard calcium sulfate scale in steam boilers. The maximum limit recommended for drinking water is 250 mg/L.
Chloride (Cl)	Dissolved from rocks and soils in small quantities. Relatively large amounts are derived from sewage, industrial wastes, and highway salting practices.	In large quantities chloride increases the corrosiveness of water. Large amounts in combination with sodium will give a salty taste. Maximum limit recommended for drinking water is 250 mg/L.
Fluoride (F)	Dissolved in small to minute quantities from most rocks and soils.	About 1.0 mg/L of fluoride in drinking water is believed to be helpful in reducing the incidence of tooth decay in small children; larger concentrations cause mottling of enamel. It is recommended that fluoride not exceed 2.0 mg/L where the average daily maximum air temperature is 58.4 to 63.8 °F.
Nitrite (NO_2)	Found in sewage and other organic wastes. Unstable in the presence of oxygen, and only present in small amounts in most waters.[3]	Presence of nitrite is generally an indication of organic pollution. Undesirable in waters for some dyeing and brewing processes.[3]
Nitrate (NO_3)	Decaying organic matter, sewage, and fertilizers are principal sources.	The maximum limit recommended for drinking water is 10 mg/L of NO_3 as N. Waters containing more than this level may cause methoglobinemia (a disease often fatal in infants) and, therefore, should not be used in infant feeding. Small concentrations have no effect on usefulness of water. Most groundwaters contain less than 10 mg/L of NO_3 as N.
Ammonia nitrogen (NH_3)	Found in many waters but usually only in trace amounts. Found in waters polluted with sewage and other organic waste.[3]	Generally indicates organic pollution. Ammonium salts are destructive to concrete made from portland cement and toxic to freshwater aquatic life in concentrations in excess of 0.02 mg/L.[4]

Phosphate (PO_4)	Dissolved in very small quantities from most rocks and soils. The chief sources are fertilizer and detergents.	Concentrations much greater than local averages may indicate contamination from phosphate detergents and/or fertilizers.
Hardness (as $CaCO_3$)	In most waters nearly all of the hardness is due to calcium and magnesium. All of the metallic cations other than the alkali metals also cause hardness. There are two classes of hardness—carbonate (temporary) and noncarbonate (permanent). Carbonate hardness refers to the hardness resulting from cations in association with carbonate and bicarbonate; it is called temporary because it may be removed by boiling the water. Noncarbonate hardness refers to that resulting from cations in association with other anions.	Hardness consumes soap before a lather will form and deposits soap curds on bathtubs. Carbonate hardness is the cause of scale formation in boilers, water heaters, radiators, and pipes, resulting in a decrease in heat transfer and restricted flow of water. Waters of hardness up to 60 mg/L are considered soft; 61 to 120 mg/L, moderately hard; 121 to 180 mg/L, hard; and more than 180 mg/L, very hard. Very soft water that has a low pH may be corrosive to plumbing. The number of milligrams per liter divided by 17.1 yields the concentration in grains per gallon.
Dissolved solids—A measure of all of the chemical constituents dissolved in a particular water. The maximum limit recommended for drinking water is 500 mg/L, but water containing up to 1,000 mg/L may be used where less mineralized supplies are not available.		
Specific conductance (micromhos at 25 °C)—A measure of the capacity of a water to conduct an electrical current. It varies with concentration and degree of ionization of the constituents. May be used to obtain a rapid estimate of the approximate dissolved-solids content of water.		
pH—The negative logarithm of the hydrogen-ion concentration. A pH of 7.0 indicates neutrality of a solution. Values higher than 7.0 denote alkaline solutions; values lower than 7.0 indicate acidic solutions. Corrosiveness of water generally increases with decreasing pH. The pH of most natural waters ranges between 6 and 8.		
Temperature—The temperature of groundwater that occurs between the water table and about 60 feet below the water table is approximately the same as the average annual air temperature (Lovering and Goode, 1963, p. 5); below this point, groundwater temperatures increase with depth about 1 °F for each 50 to 100 feet.		

[1] Lloyd and Growitz (1977), p. 51-54.
[2] Recommended drinking-water limits are from U.S. Environmental Protection Agency (1975, 1977).
[3] Ward and Wilmoth (1968), p. 20-22.
[4] U.S. Environmental Protection Agency (1976), p. 10.

Table 9. *Median Chemical Analyses of Groundwater*

(Concentrations are in milligrams per liter unless otherwise indicated)

Group or formation	Number of samples	pH (units)	Arsenic (As)	Aluminum (Al)	Alkalinity ($CaCO_3$)	Cadmium (Cd)	Calcium (Ca)	Chloride (Cl)	Chromium (Cr)	Dissolved solids	Fluoride (F)	Hardness ($CaCO_3$)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)	NH_3, as N	NO_2, as N	NO_3, as N	Potassium (K)	Sodium (Na)	Sulfate (SO_4)	Total org. carbon	Zinc (Zn)
Alluvium	8	6.6	<.005	.65	42	<.003	19.6	13.5	<.01	127	<.10	62	.24	<.01	.02	3.6	.01	.06	.002	2.0	.87	8.2	10	2.0	.02
Casselman Fm.	5	7.4	<.01	.05	152	<.003	43.0	14.0	.01	226	.12	142	.15	<.05	.16	8.3	.02	.01	.002	.20	.96	4.7	15	—	.02
Glenshaw Fm.	14	7.2	<.01	.08	138	<.003	46.0	3.5	.02	214	.14	123	.23	<.05	.08	8.1	.01	.05	.002	.07	1.0	4.3	10	—	.02
Allegheny Gp.	11	6.5	<.005	.08	52	<.001	16.0	5.0	.02	130	.18	73	4.5	.01	.37	3.2	.02	.08	.002	.02	1.3	.80	10	0	.03
Pottsville Gp.	6	6.8	<.005	.06	52	<.001	13.6	5.0	<.01	103	.18	61	2.4	<.005	.32	4.1	.02	.10	.002	.02	1.6	2.0	5.0	0	.04
Mauch Chunk Fm	1	6.8	<.005	.04	78	<.003	36.3	11.0	<.01	118	<.10	82	.02	<.05	.02	2.5	<.01	.08	.086	2.1	2.0	4.8	5.0	6.6	.02
Burgoon Fm.	5	6.4	<.005	.02	30	<.0005	22.5	5.0	<.01	106	<.10	70	.07	<.05	.06	3.2	.02	.01	.002	.08	1.3	6.8	17	1.1	.04
Shenango Fm. through Oswayo Fm., undiv.	2	6.5	<.005	.35	64.5	<.001	17.2	13.5	.02	130	<.11	59	.75	.006	.06	.40	0	.05	.004	1.8	.96	11.8	<5	0	.04
Huntley Mountain Fm.	14	7.1	<.005	.05	72	<.001	23.6	7.0	.01	132	.17	68	.34	<.005	.04	4.0	.02	.06	.002	.13	.75	16.8	10	2.4	.03
Catskill Fm.	100	7.1	<.005	.08	84	<.001	21.4	5.0	<.01	139	.11	61	.08	.005	.02	3.9	.01	.04	.002	.40	1.1	9.0	10	2.6	.03
Lock Haven Fm.	66	7.6	<.005	.07	170	<.0005	38.2	4.0	<.01	234	.14	124	.11	<.005	.03	9.6	.01	.08	.002	.04	1.6	19.0	13	1.9	.03
Brallier and Harrell Fms., undiv.	5	7.0	<.005	.03	120	<.003	7.3	2.0	<.01	214	.22	32	.18	<.05	.07	3.0	<.01	.28	.002	.02	.66	44.6	20	1.4	.01
Trimmers Rock Fm.	10	7.4	<.005	.07	89	<.0005	19.4	2.0	<.01	131	.14	72	.09	<.005	.04	5.8	.01	.06	.002	.03	.43	7.6	14	5.0	.02
Hamilton Gp.	6	7.0	<.005	.07	121	<.003	47.9	9.5	<.01	254	<.22	157	.14	<.05	.65	6.8	.01	.10	.002	.42	.52	8.8	28	5.2	.10
Onondaga and Old Port Fms., undiv.	4	7.4	<.005	.06	220	<.0004	62.6	7.5	<.01	302	<.10	231	.24	.005	.06	19.6	.01	.10	.004	.75	.70	4.2	28	1.8	.02
Keyser and Tonoloway Fms., undiv.	5	7.7	<.005	.06	236	<.0005	60.8	7.0	<.01	400	.18	312	.08	<.005	.01	27.3	<.01	.01	.002	3.1	.74	1.2	35	3.1	.03
Keyser Fm. through Mifflintown Fm., undiv.	5	6.9	<.005	.08	70	<.003	18	2.0	<.01	98	<.10	65	.14	<.05	.02	4.7	.02	.08	.002	.06	.52	7.8	10	6.0	.02
Wills Creek Fm.	5	7.7	<.005	.06	182	<.0005	53.2	7.0	.01	302	.10	251	.09	<.005	.01	21.1	.01	.05	.002	5.1	.78	.13	27	2.2	.02
Bloomsburg and Mifflintown Fms., undiv.	8	7.4	<.005	.06	116	<.0005	46.1	11	<.02	212	<.10	147	.05	<.005	.01	8.8	.02	.06	.008	3.8	.77	3.4	18	1.6	.02
Clinton Gp.	5	6.8	<.005	.04	66	<.0005	16.0	3.0	<.01	102	.10	60	.05	<.005	.02	5.7	.01	.25	.008	.11	.50	.90	5.0	1.1	.02
Juniata Fm.	3	7.4	<.005	.01	92	<.003	16.4	2.0	<.01	134	<.10	92	.06	<.05	.02	11.7	.01	.01	.002	.10	1.4	.90	14	3.2	.02
Bald Eagle Fm.	6	7.0	<.005	.04	69	.002	14.2	2.0	.01	122	<.11	68.5	.04	<.05	.02	8.4	<.01	.01	<.002	.38	.95	4.0	10	1.8	.02
Coburn Fm. through Nealmont Fm., undiv.	6	7.5	<.005	.01	158	<.003	67.5	6.0	<.01	227	<.10	168	.06	<.05	.02	4.3	<.02	.08	.003	3.4	.86	9.3	11	4.6	.03

Table 10. *Summary of Chemical-Quality Characteristics of Groundwater from Predominantly Calcareous and Noncalcareous Rock Units in the Valley and Ridge Physiographic Province*

	Predominantly noncalcareous units				Predominantly calcareous units			
	Number of	Concentration[1]			Number of	Concentration[1]		
Constituents (mg/L)	samples	Minimum	Median	Maximum	samples	Minimum	Median	Maximum
pH	53	5.5	7.2	9.1	41	6.9	7.5	8.0
Arsenic	53	<.005	<.005	.284	41	<.005	<.005	.01
Aluminum	53	.01	.07	.43	39	<.01	.06	.39
Alkalinity ($CaCO_3$)	53	4	90	266	41	100	162	308
Cadmium	53	<.0002	.0009	<.003	41	<.0002	<.0005	<.003
Calcium	53	.60	15.5	73.4	41	9.59	53.6	107
Chloride	53	1.0	3.0	66	41	1.0	8.0	37
Chromium	53	<.01	<.01	.03	41	<.0001	<.01	.02
Dissolved solids	53	4.0	148	380	40	108	292	580
Fluoride	52	<.10	.11	.85	38	<.10	<.10	.60
Hardness ($CaCO_3$)	51	12	54	350	39	88	214	404
Iron	53	.01	.07	5.2	41	<.01	.06	5.7
Lead	53	<.003	.015	<.05	41	<.003	.009	.065
Manganese	53	<.01	.02	.67	41	.01	.01	.13
Magnesium	53	.30	4.6	38.1	41	2.3	13.8	38.7
Nickel	53	<.01	.01	.04	40	<.01	.01	.05
NH_3, as N	53	<.01	.06	.77	41	<.01	.05	.31
NO_2, as N	53	<.002	.002	.172	41	<.002	.002	.034
NO_3, as N	53	.01	.10	5.06	41	.01	3.08	26.5
Potassium	53	.12	.66	14.4	41	.40	.80	3.4
Sodium	53	.40	9.5	105	41	.50	3.6	20.6
Specific conductance	53	<50	205	505	41	200	360	740
Sulfate	51	<5	10	125	40	4	22	95
Zinc	53	<.01	.02	1.23	40	<.01	.02	1.4

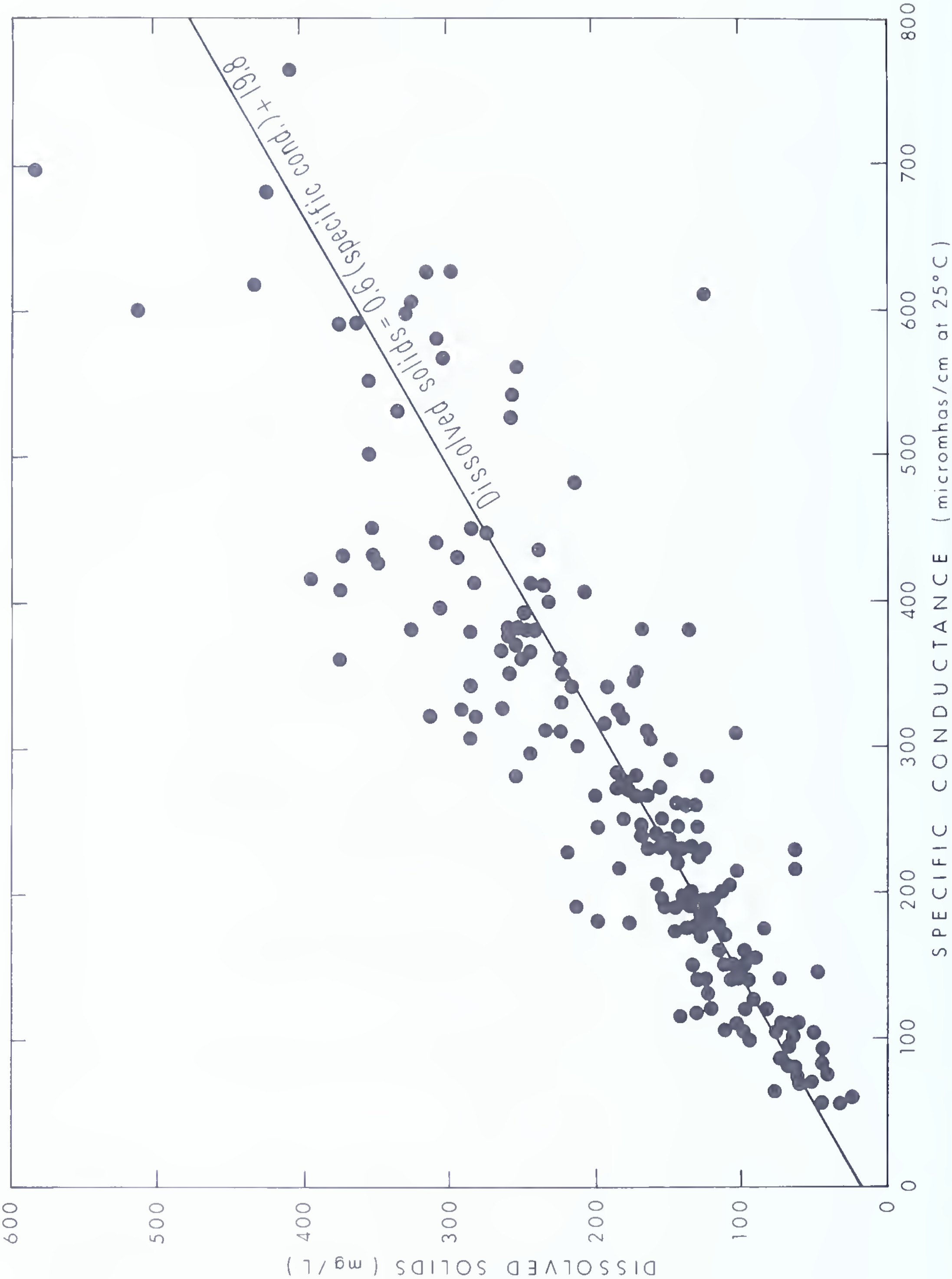
[1] Concentrations are in milligrams per liter, except specific conductance (micromhos) and pH (units).

Table 11. *Summary of Field Water-Quality Measurements*

Group or formation	Type	pH (units) No. of wells	pH Percent[1] 25	pH Percent[1] 50 (median)	pH Percent[1] 75	Hardness (grains/gal) No. of wells	Hardness Percent[1] 25	Hardness Percent[1] 50 (median)	Hardness Percent[1] 75	Specific conductance (micromhos) No. of wells	Sp. cond. Percent[1] 25	Sp. cond. Percent[1] 50 (median)	Sp. cond. Percent[1] 75
Alluvium	D	17	6.4	6.8	7.7	20	3	5	7	22	119	195	380
	N	17	5.8	6.2	6.6	20	2	5	6	16	110	195	280
Conemaugh Group	D	17	6.1	6.3	7.5	40	6	8	9	39	265	305	385
	N	0	—	—	—	1	—	8	—	1	—	245	—
Allegheny Group	D	5	—	7.4	—	14	3	5	9	15	105	228	415
	N	1	—	5.9	—	2	—	8	—	2	—	288	—
Pottsville Group	D	4	—	7.8	—	5	—	4	—	5	—	130	—
	N	1	—	7.6	—	2	—	2	—	1	—	119	—
Mauch Chunk Formation	N	—	—	—	—	1	—	2	—	1	—	190	—
Burgoon Sandstone	D	5	—	7.1	—	7	—	3	—	6	—	140	—
	N	1	—	6.4	—	1	—	2	—	—	—	—	—
Huntley Mountain Formation	D	11	6.8	7.1	7.4	17	2	3	4	17	92	135	200
	N	5	—	7.2	—	2	—	10	—	2	—	905	—
Catskill Formation	D	82	6.7	7.2	7.6	137	3	4	6	144	145	200	330
	N	11	7.2	7.3	7.8	14	2	5	7	16	195	275	520
Lock Haven Formation	D	28	7.2	7.4	7.8	83	4	6	10	84	260	345	420
	N	2	—	7.6	—	3	—	7	—	4	—	517	—
Trimmers Rock Formation	D	7	—	7.6	—	11	3	4	7	13	150	195	270
	N	1	—	7.6	—	1	—	9	—	1	—	325	—
Brallier and Harrell Formations, undivided	D	5	—	7.5	—	11	2	3	5	13	205	230	380
	N	2	—	7.6	—	2	—	12	—	2	—	495	—
Hamilton Group	D	22	7.1	7.6	7.9	30	4	6	8	35	250	340	400
	N	10	6.5	7.0	7.6	12	5	6	11	10	200	218	310

Onondaga and Old	D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Port Formations, undivided	N	9	—	7.0	—	10	6	9	12	9	—	347	—
Keyser and Tonoloway Formations, undivided	D	9	7.0	7.5	8.0	14	10	14	17	14	340	373	470
	N	8	—	7.5	—	11	9	19	25	8	350	745	1100
Wills Creek Formation	D	3	—	7.0	—	8	—	10	—	8	—	338	—
	N	1	—	7.4	—	3	—	32	—	1	—	1080	—
Bloomsburg and Mifflintown Formations, undivided	D	2	—	6.9	—	13	6	9	10	14	250	280	380
	N	3	—	7.0	—	4	—	5	—	3	—	175	—
Clinton Group	D	2	—	7.6	—	9	—	4	—	9	—	125	—
	N	0	—	—	—	1	—	3	—	1	—	75	—
Tuscarora Formation							NO DATA						
Juniata Formation	D	3	—	7.4	—	6	—	4	—	5	—	130	—
	N	1	—	6.0	—	1	—	4	—	1	—	775	—
Bald Eagle Formation	D	7	—	7.2	—	8	—	3	—	7	—	120	—
Reedsville Formation	D	6	—	7.1	—	7	—	7	—	7	—	260	—
	N	1	—	8.2	—	1	—	2	—	0	—	—	—
Coburn through Loysburg Formations, undivided	D	14	7.2	7.7	8.0	20	9	12	20	20	270	375	600
	N	2	—	6.8	—	1	—	11	—	1	—	300	—
Bellefonte Formation	D	7	7.4	7.5	8.0	14	13	17	19	14	520	578	600
	N	5	7.4	7.7	7.7	6	12	13	15	—	—	—	—
Axemann Formation	D	—	—	—	—	1	—	16	—	1	—	590	—
	N	1	—	7.6	—	1	—	17	—	—	—	—	—
Nittany Formation	D	2	—	7.6	—	3	—	14	—	4	—	495	—
	N	14	7.6	7.6	7.9	15	11	12	13	6	—	382	—
Stonehenge Formation	D	—	—	—	—	2	—	9	—	2	—	335	—
Gatesburg Formation	N	4	—	7.8	—	8	—	6	—	—	—	—	—
Warrior Formation							NO DATA						

[1] Percent of wells that have values less than or equal to the value shown.


Dissolved solids = 0.6 (specific cond.) + 19.8
SPECIFIC CONDUCTANCE (micromhos/cm at 25°C)
DISSOLVED SOLIDS (mg/L)
0
100
200
300
400
500
600
700
800

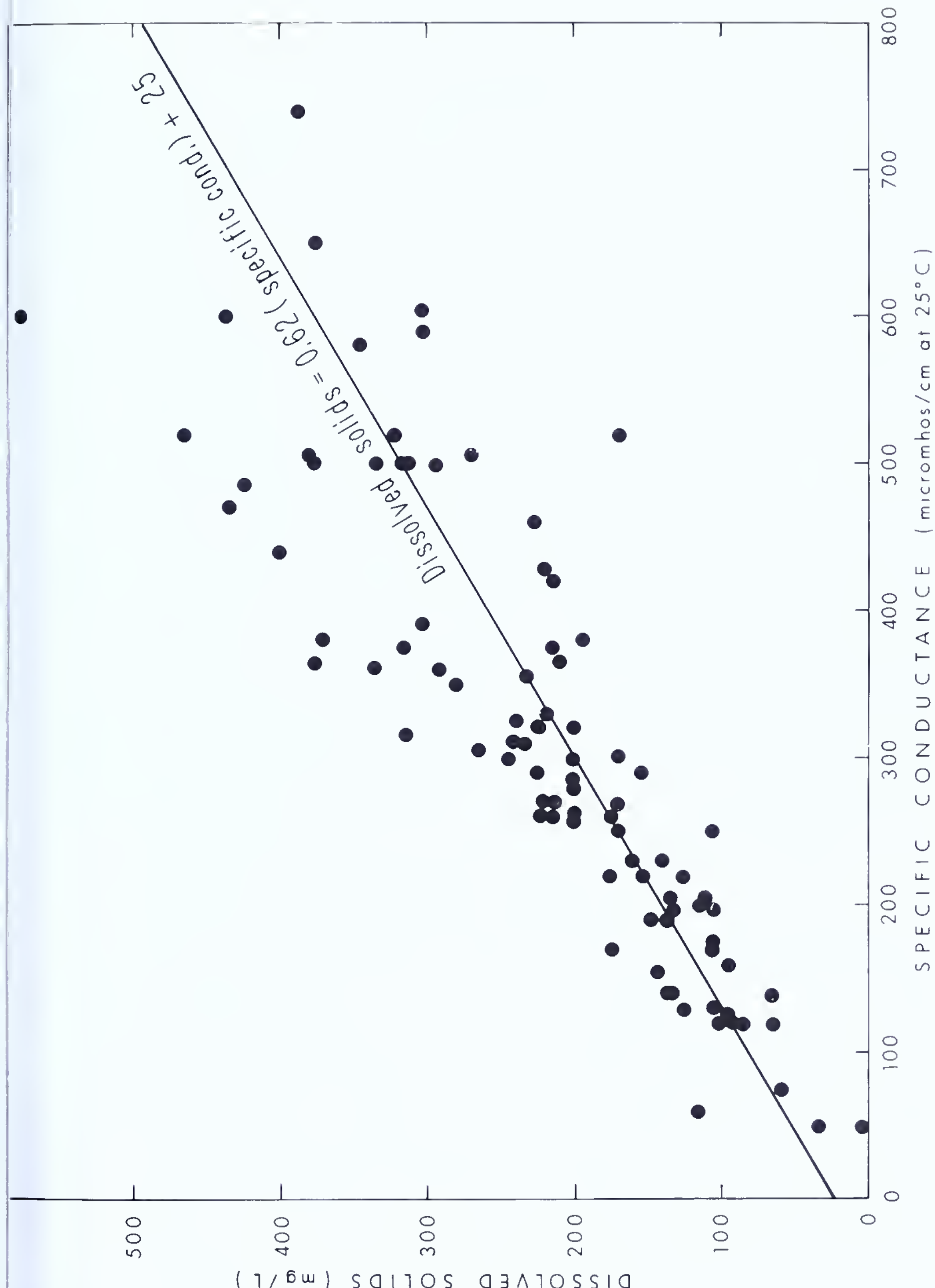


Figure 15. Relationship of dissolved solids to field specific conductance in the Valley and Ridge physiographic province (based on 93 samples).

plotted. Thus a reasonable estimate of dissolved solids can be obtained by multiplying the specific conductance by 0.61 and adding 22 (average of values from the two provinces).

The maximum recommended limit for dissolved solids in drinking water is 500 mg/L (U.S. Environmental Protection Agency, 1975), which is equivalent to a specific conductance of about 784 micromhos. Slightly less than 5 percent of the water samples have a specific conductance higher than 784, which attests to the general good quality of groundwater within the basin. However, in some aquifers a relatively high percentage of samples exceed the limit, the highest being the combined Keyser and Tonoloway Formations, in which almost 25 percent of the samples are above the limit.

HARDNESS

Hardness in water is a measure of the water's resistance to sudsing and is primarily caused by the presence of calcium and magnesium ions. Field measurements of hardness (Table 11) are reported in grains per gallon rather than milligrams per liter because the field method is only accurate to plus or minus 1 grain per gallon. To state the results in milligrams per liter would imply a false accuracy. The approximate milligrams per liter may be obtained by multiplying the number of grains per gallon by 17.1.

The hardness map on Plate 1 shows the distribution of groundwater hardness within the West Branch Susquehanna River basin. In general, groundwater is hardest in the major valleys underlain by limestone and calcareous shale in the Valley and Ridge province. Comparatively soft water occurs under ridges, hillsides, and other areas underlain by sandstone and shale.

IRON AND MANGANESE

Iron and manganese, which resemble each other in chemical behavior, are generally present in groundwater in small concentrations. If the concentration of iron exceeds 0.3 mg/L or the concentration of manganese exceeds 0.2 mg/L, staining of plumbing fixtures and cooking utensils can occur.

Samples containing objectionable amounts of iron were collected from almost every rock unit, but were more frequent from wells located in noncalcareous shale and sandstone. Almost 60 percent of the samples collected from coal-bearing rocks exceed the recommended limit for iron.

Of the 316 samples analyzed for iron and manganese, 77 (or about 24 percent) exceed EPA (U.S. Environmental Protection Agency, 1975) recommended limits for iron (0.3 mg/L) and 108 (or about 34 percent) exceed recommended limits for manganese (0.05 mg/L). Thus, iron and manganese are the constituents most often present in objectionable amounts in groundwater from the basin.

HYDROGEN SULFIDE

Many wells were reported to produce water having the "rotten egg" odor of hydrogen sulfide. No measurements were made of this constituent. Occurrences appear to be sporadic and unpredictable, but are most common in rock units consisting primarily of shale, such as the Reedsville and Mahantango Formations. Hydrogen sulfide is distasteful but harmless in drinking water.

NITRATE

Nitrate generally occurs in low concentrations in groundwater unaffected by human activities. The median concentration of 0.10 mg/L of nitrate in water from predominantly noncalcareous rock units is considerably less than the median of 3.08 mg/L for calcareous units. This relatively high median concentration is in part due to extensive fertilization of the intensively cultivated soils overlying these rock units.

Only two of 316 samples exceed EPA mandatory limits for nitrate of 10 mg/L as N. This low number is partly due to the attempt in this study to collect water samples that reflect background (or uncontaminated) groundwater quality; thus wells having potentially high nitrate concentrations may have been missed.

TRACE METALS

Measurements were made for several potentially toxic trace metals to determine their occurrence within the basin. The metals tested for were arsenic, cadmium, chromium, and lead. Zinc, although not considered to be toxic to humans, has also been included in this category. Table 8 is a list of the normal source and significance of these elements.

No areal patterns could be ascertained from the few samples that exceed mandatory drinking-water limits for these constituents. Most samples have levels of these metals below detectable limits; however, three lead analyses and two chromium analyses are higher than the limit of 0.05 mg/L. Although there is no mandatory limit for this constituent, zinc was measured in excess of 1 mg/L in six samples, which is an unusually high concentration in groundwater. Eleven samples have cadmium above detectable limits but below the EPA limit. All detected occurrences of trace metals are probably natural in origin rather than man-made.

WATER-QUALITY PROBLEMS

The most commonly reported groundwater-quality problems in the basin are as follows, in approximate order of prevalence: excessive iron and manganese, hydrogen sulfide, hardness, bacterial organisms from sewage, acid

mine drainage, petroleum products from buried storage tanks, excessive nitrates, and landfill leachate. Most of these are local in extent and often confined to individual wells or a small area. The vast majority of problems could be eliminated by the use of deeper casing and insuring that the annular opening around the exterior of the casing is tightly sealed with cement grout.

Bacterial contamination is possible in any area where on-lot waste disposal systems are utilized. This is especially true in communities of closely spaced homes, where some wells must unavoidably be placed downslope from leach fields on adjacent lots. Also, the shallow groundwater around urban areas is often contaminated by leakage from sewer systems.

Groundwater contaminated by acid mine drainage can generally be identified by elevated amounts of iron, sulfate, and dissolved solids, and low pH. However, in many of the areas underlain by coal, natural groundwater has these characteristics. Thus the incidence of pollution from acid mine drainage is not well documented because of the difficulty in determining whether the water quality is natural or a result of contamination. New federal regulations requiring sampling of wells prior to and during mining should help identify the magnitude of this problem.

Hydrocarbon contamination of groundwater is most often caused by leakage of fuel oil or gasoline from buried storage tanks. Most known instances involve only a few acres and frequently occur where there is a high concentration of petroleum terminals and service stations.

Although a potential source of serious problems, few instances of landfill leachate contamination of wells have been reported. This is partly due to the placement of landfill sites in sparsely populated localities.

STRATIGRAPHY AND WATER-BEARING PROPERTIES OF THE ROCKS

The areas covered by reports containing detailed stratigraphic descriptions and large-scale geologic maps are shown in Figure 16. These reports were utilized in preparing the stratigraphic discussion that follows. Geology (Plate 1) and stratigraphic nomenclature are from the *Geologic Map of Pennsylvania* (Berg and others, 1980).

Descriptions of the water-bearing properties of the rocks are partly from data collected by Lohman (1938, 1939), Wood (1980), Seaber (1968), Williams and Eckhardt (in progress), and Lloyd and Carswell (1981). Additional physical information on wells and groundwater quality is based on data collected during the course of this study.

Table 12 is a summary of well construction and yield data by formation. This information has been combined with geologic and water-quality data to prepare the descriptions that follow. These descriptions are arranged in

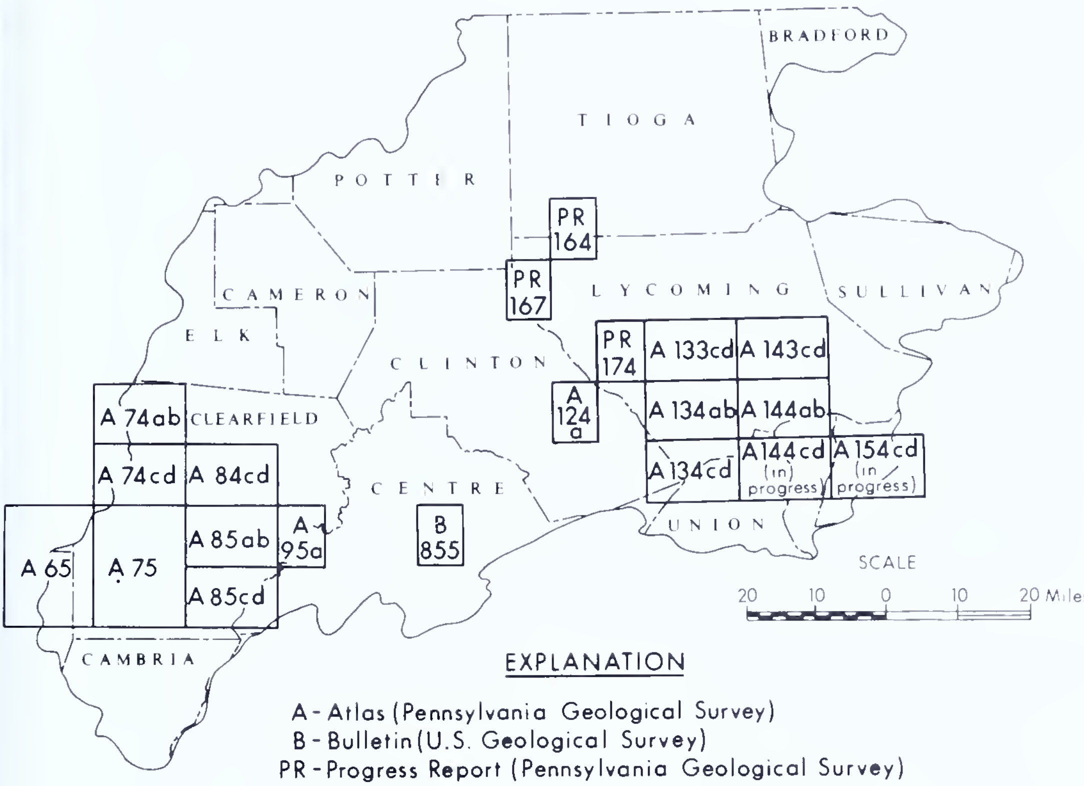


Figure 16. Location of detailed geologic mapping in the West Branch Susquehanna River basin.

order of increasing geologic age. Medians given for water-bearing properties and water-quality data approximate the most common values obtained from randomly located wells; ranges suggest the magnitude of potential values. Also given in the discussion are the number of wells having reported yields less than 5 gal/min and greater than 100 gal/min. These are good indicators of the potential for development of a successful domestic or municipal-supply well, respectively.

The EPA recommended and mandatory limits (U.S. Environmental Protection Agency, 1977) and the health effects of the chemical constituents in groundwater described in the following sections are given in Table 8.

ALLUVIUM

Stratigraphy

Most of the northern part of the area is covered with thick unconsolidated deposits of Quaternary age. Of these materials, the deposits filling the stream valleys, collectively called alluvium, have the greatest potential as aquifers. Plate 1 shows the estimated distribution of major alluvial deposits and the locations, depths, and yields of wells that penetrate them.

Table 12. *Summary of Well Construction and Yield Data*

Group or formation	Type	Well depth (feet): No. of wells	Well depth: Percent 25	Well depth: Percent 50 (median)	Well depth: Percent 75	Casing length (feet): No. of wells	Casing length: Percent 25	Casing length: Percent 50 (median)	Casing length: Percent 75	Depth to water (feet): No. of wells	Depth to water: Percent 25	Depth to water: Percent 50 (median)	Depth to water: Percent 75	Reported well yield (gal/min): No. of wells	Reported well yield: Percent 25	Reported well yield: Percent 50 (median)	Reported well yield: Percent 75	Specific capacity ([gal/min]/ft): No. of wells	Specific capacity: Percent 25	Specific capacity: Percent 50 (median)	Specific capacity: Percent 75
Alluvium	D	71	37	48	74	65	36	48	75	52	7	15	26	52	10	20	30	17	0.41	1.4	2.3
	N	66	30	46	72	61	29	40	73	57	7	10	18	60	92	250	495	47	13	24	55
Conemaugh Gp.	D	84	90	120	150	80	20	23	31	55	35	54	80	85	5	10	15	11	.12	.35	.50
	N	5	—	303	—	5	—	25	—	5	—	77	—	6	—	16	—	2	—	3.8	—
Allegheny Gp.	D	48	76	110	163	46	20	21	30	29	25	42	78	46	7	10	16	14	.15	.64	3.2
	N	8	—	166	—	7	—	30	—	6	—	42	—	8	—	28	—	4	—	7.5	—
Pottsville Gp.	D	34	70	97	160	31	15	21	22	25	11	35	108	34	7	16	20	12	.76	2.1	11
	N	14	145	175	280	9	—	25	—	11	12	16	32	13	25	60	82	6	—	2.6	—
Mauch Chunk Fm.	D	6	—	345	—	6	—	22	—	6	—	98	—	6	—	4	—	4	—	30	—
	N	1	—	420	—	1	—	41	—	1	—	50	—	1	—	30	—	—	—	—	—
Burgoon Ss.	D	30	90	123	170	30	20	31	42	24	27	44	77	29	5	10	29	17	.07	.19	.76
	N	17	100	275	395	13	30	41	48	15	27	50	102	16	20	88	150	10	1.0	4.4	10
Huntley Mountain Fm.	D	45	86	141	240	44	35	49	62	28	35	52	66	40	10	14	20	21	.14	.46	.75
	N	17	245	371	485	13	22	26	40	11	10	56	79	15	36	73	100	12	.50	2.0	6.3
Catskill Fm.	D	382	82	131	203	362	21	30	44	293	20	46	80	352	5	10	17	172	.08	.20	.62
	N	49	98	200	307	43	34	47	65	39	14	39	65	45	11	30	52	31	.25	.89	5.0
Lock Haven Fm.	D	193	90	133	197	187	21	33	61	147	19	40	74	184	5	8	14	69	.04	.12	.52
	N	18	97	129	177	17	54	65	92	16	9	20	38	17	14	25	92	10	.26	11	23
Trimmers Rock Fm.	D	32	123	176	300	32	20	29	41	25	33	49	78	30	4	8	16	16	.03	.06	.40
	N	3	—	430	—	3	—	21	—	3	—	60	—	3	—	1	—	2	—	.02	—
Brallier and Harrell Fms., undiv.	D	38	85	142	220	38	20	27	38	27	21	32	60	38	3	5	10	21	.03	.07	.22
	N	3	—	550	—	3	—	33	—	2	—	30	—	3	—	30	—	1	—	.25	—
Hamilton Gp.	D	93	80	150	210	80	20	28	45	73	8	15	26	85	3	10	17	48	.03	.16	.60
	N	23	150	200	255	18	38	51	82	23	13	18	45	23	21	30	110	15	.19	.51	3.7
Onondaga and Old Port Fms., undiv.	D	45	81	105	153	43	26	41	51	36	18	29	50	42	10	20	35	17	.15	.77	2.2
	N	18	115	182	247	15	40	50	66	14	8	11	25	18	24	89	352	10	2.4	7.3	8.5
Keyser and Tonoloway Fms., undiv.	D	37	77	148	224	32	35	61	87	25	16	35	66	33	10	20	50	12	.40	1.5	5.5
	N	17	118	215	321	13	49	60	91	15	19	45	55	15	60	80	244	10	.90	6.6	14

Wills Creek Fm.	D	22	73	121	158	21	29	41	42	7	—	49	—	21	10	12	26	—	—	—	—
	N	10	148	204	300	8	—	40	—	4	—	26	—	9	—	60	—	2	—	3.2	—
Bloomsburg and	D	42	110	148	200	40	21	31	57	21	15	39	56	38	6	11	20	9	—	.12	—
Mifflintown Fms., undiv.	N	10	135	229	335	9	—	45	—	8	—	25	—	9	—	100	—	7	—	5.1	—
Clinton Gp.	D	23	127	198	265	23	21	41	73	15	3	65	100	23	8	10	18	10	.13	.17	.30
	N	3	—	201	—	3	—	50	—	2	—	33	—	3	—	30	—	—	—	—	—
Tuscarora Fm.	D	1	—	350	—	1	—	51	—	1	—	11	—	1	—	10	—	1	—	.04	—
Juniata Fm.	D	14	130	200	242	12	20	26	43	13	21	55	100	13	3	12	24	9	—	.07	—
	N	1	—	57	—	1	—	50	—	1	—	31	—	—	—	—	—	—	—	—	—
Bald Eagle Fm.	D	18	130	210	360	18	24	40	45	16	36	62	99	18	6	9	20	15	.06	.10	.18
	N	2	—	177	—	2	—	22	—	2	—	22	—	2	—	70	—	1	—	6.0	—
Reedsville Fm.	D	17	78	120	241	12	24	36	42	15	3	30	60	14	8	10	22	9	—	.25	—
	N	2	—	202	—	2	—	40	—	2	—	59	—	2	—	40	—	2	—	15	—
Coburn Fm.	D	47	160	215	274	46	41	77	125	44	44	107	140	46	4	12	25	36	.08	.25	.44
through Loysburg Fm., undiv.	N	3	—	205	—	2	—	66	—	3	—	25	—	2	—	33	—	2	—	22	—
Bellefonte Fm.	D	45	132	220	319	42	25	46	74	36	27	63	109	44	6	15	50	25	.09	.18	3.7
	N	19	175	330	420	17	27	38	74	15	18	62	113	19	12	50	350	13	.18	9.6	3.3
Axemann Fm.	D	5	—	180	—	5	—	70	—	5	—	125	—	5	—	10	2	—	—	.50	—
	N	1	—	250	—	1	—	103	—	1	—	66	—	1	—	83	—	1	—	6.9	—
Nittany Fm.	D	9	—	241	—	9	—	79	—	5	—	100	—	9	—	20	—	—	—	—	—
	N	25	235	357	405	18	26	60	100	21	12	80	149	22	450	538	1200	18	10	33	127
Stonehenge Fm.	D	7	—	250	—	7	—	168	—	2	—	145	—	6	—	6	—	—	—	—	—
Gatesburg Fm.	N	22	170	304	360	20	37	56	105	16	26	48	94	18	120	425	600	15	6.6	11	29
Warrior Fm.	D	1	—	445	—	1	—	413	—	—	—	—	—	1	—	12	—	—	—	—	—

[1] Percent of wells that have values equal to or less than the value shown.

Alluvium fills some valleys to depths of over 200 feet and consists of clay, sand, and gravel that in places has been transported relatively long distances as a result of glacial processes (outwash) and in other areas has been weathered from the nearby rock formations.

Water-Bearing Properties

Reported yields of 112 wells range from 5 to over 3,000 gal/min in a well of large diameter owned by the Williamsport Municipal Authority. The median yields of domestic and nondomestic wells are 20 and 250 gal/min, respectively. Over 75 percent of the wells drilled for nondomestic purposes yield more than 100 gal/min, as shown in Figure 17. The large divergence between the domestic and nondomestic plots in Figure 17 is partly caused by a difference in well construction. High-capacity wells in alluvium are equipped with some type of well screen, whereas low-yielding wells simply withdraw groundwater through the open end of the casing or at most a few torch-cut slots in the casing.

Well depths range from 11 to 207 feet, and the median is slightly less than 50 feet. Well depths can be used to estimate minimum alluvium thickness (Plate 1); saturated thicknesses of 50 feet or more are optimum for the development of high-capacity wells.

Water Quality

Eight complete chemical analyses by the Department of Environmental Resources laboratory were used to evaluate the water quality. Three samples each exceed the EPA standard for iron and manganese and two have excessive amounts of nitrate. All other constituents analyzed are below the maximum recommended concentrations.

Lloyd and Carswell (1981) found the water from alluvium to be acidic and calcium sulfate chloride in type. This was not confirmed in the present study partly because Lloyd and Carswell's analyses were concentrated in the Williamsport area along the West Branch, which should produce a slightly different chemical character than analyses from alluvium along minor tributaries. The principal anion found in the basin is bicarbonate.

The results of 34 field analyses indicate that the water is moderately hard and contains low to moderate amounts of dissolved solids.

Evaluation of the Aquifer

Very large supplies of groundwater are possible from alluvium; however, the cost for well development may be high because well screens are a necessity and in some instances several test wells may be needed to find suitable aquifer material. Water quality is generally good, but wells located in major stream valleys may produce water high in sulfate and chloride.

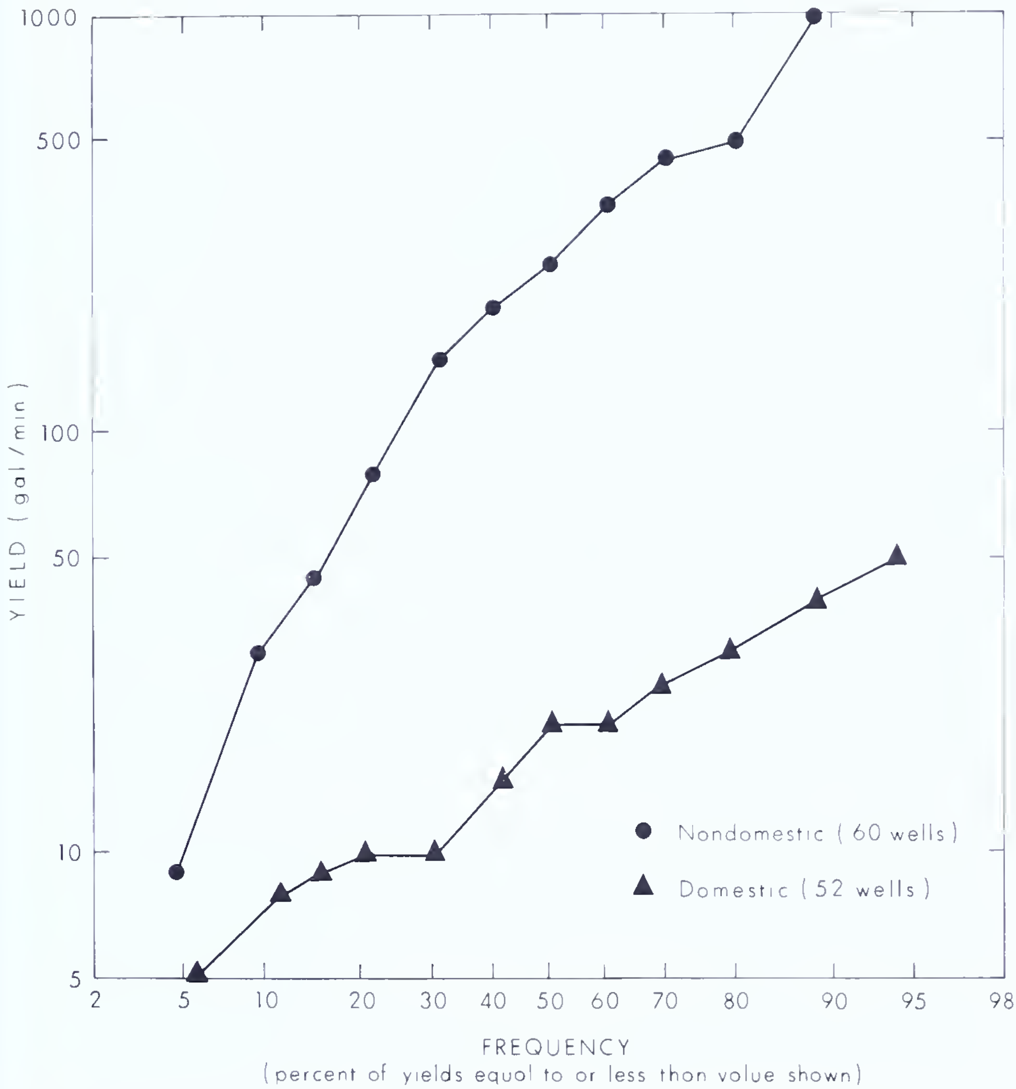


Figure 17. Percent frequency distribution of well yields from alluvium.

CONEMAUGH GROUP

Stratigraphy

The Conemaugh Group of Late Pennsylvanian age caps the highest ridges and plateaus in the southwestern part of the area. It has been divided into two formations: the Casselman, which is the upper of the two and is present in only a few localities, and the Glenshaw. The unit ranges in thickness from less than 100 feet in Centre County to over 600 feet in Cambria County. It is made up of shale, sandstone, thin beds of limestone and coal, and a few beds of red shale.

Water-Bearing Properties

The reported yields of 91 wells range from 1 to 33 gal/min. The median yields of domestic and nondomestic wells are 10 and 16 gal/min, respectively. Sixteen wells (18 percent) have yields of less than 5 gal/min.

Well depths range from 48 to 716 feet, and the deepest water-bearing zone is reported to be at 300 feet. Water-bearing zones are most frequently encountered in the 51- to 100-foot interval; about 63 percent of the wells penetrate zones in this interval.

Water Quality

Nineteen complete chemical analyses, five from the Casselman Formation and 14 from the Glenshaw Formation, were used to evaluate the water quality. Seven samples (37 percent) exceed the EPA limit for iron and 11 (58 percent) contain excessive manganese. All other constituents are below the maximum concentrations recommended for public water supply by the EPA. Water from this unit is a calcium bicarbonate type, as shown in Figure 18.

The results of 41 field analyses indicate that the water is hard (8 grains per gallon) and contains a moderate to moderately high amount of dissolved solids.

Evaluation of the Aquifer

The Conemaugh Group yields a sufficient quantity of water for domestic and other uses requiring small supplies. High levels of iron and manganese are a frequent problem.

Large supplies (50 gal/min or more) are difficult to obtain because of the topographic position of the unit and its lithologic character (predominantly shale and siltstone).

ALLEGHENY GROUP

Stratigraphy

The Allegheny Group underlies a considerably larger area than the Conemaugh and is probably present as far east as Sullivan County, where the rocks of Pennsylvanian age are mapped as Allegheny and Pottsville Groups, undivided. This rock unit is lithologically similar to the Conemaugh Group except that the coals are much thicker in the Allegheny and thus of greater economic importance. Reported thicknesses for this unit are consistently about 300 feet.

Water-Bearing Properties

Reported yields of 54 wells range from 3 to 100 gal/min. Domestic wells have a median yield of 10 gal/min and nondomestic wells have a median of

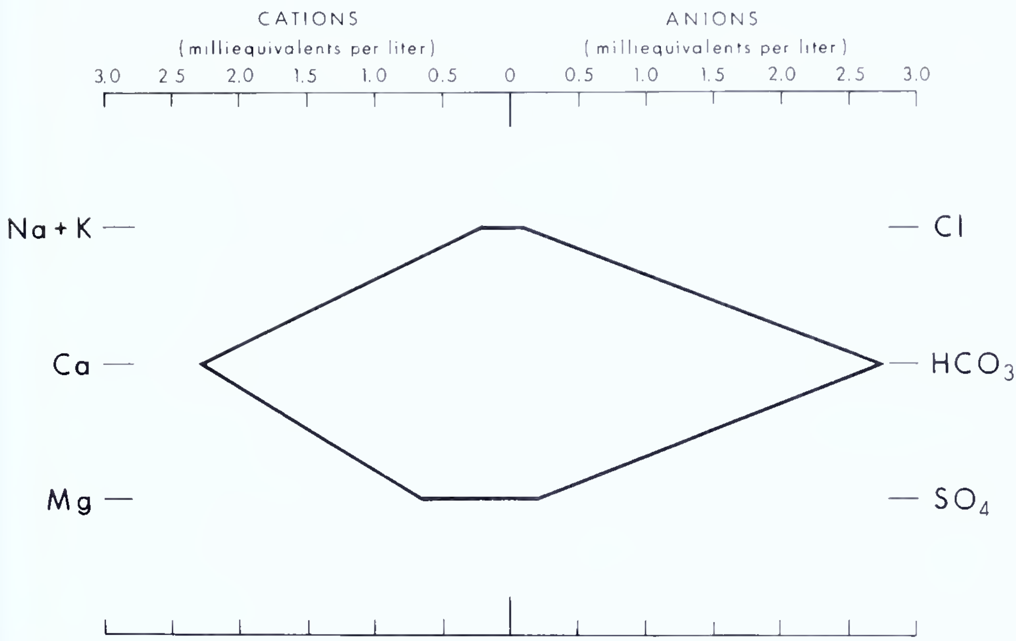


Figure 18. Median chemical character of groundwater from the Glenshaw Formation (based on 14 analyses).

30 gal/min. Three wells, or 5 percent, have yields less than 5 gal/min and two wells, or 4 percent, have yields greater than 100 gal/min.

Well depths range from 40 to 310 feet, and the medians are 110 and 166 feet for domestic and nondomestic wells, respectively. About 71 percent of the wells drilled to a depth of 100 feet or more encounter a water-bearing zone in the 51- to 100-foot interval, which is the interval that has the highest frequency of zones. The deepest reported water-bearing zone is at 220 feet.

Water Quality

Eleven complete chemical analyses were used to evaluate the chemical quality of this group. Eight samples (73 percent) exceed the EPA limit for both iron and manganese. A single sample has excessive dissolved solids and two are above the limit for chromium.

The results of 17 field analyses indicate that the water is moderately hard and contains a moderate amount of dissolved solids.

Evaluation of the Aquifer

Many parts of the Allegheny Group are disrupted as a result of surface and deep mining of coal, which makes the occurrence of groundwater somewhat unpredictable. However, when undisturbed or saturated this aquifer should yield sufficient quantities of water for small to moderate supplies. Most supplies contain excessive amounts of iron and manganese and thus require treatment in order to prevent staining of clothing and utensils.

POTTSVILLE GROUP

Stratigraphy

In most of the basin the Pottsville Group has been divided into two formations: the Elliott Park, which is dominantly sandstone, and the Curwensville, which is highly variable in thickness and lithology but consists mainly of sandstone, siltstone, thin coal beds, and conglomerate. Thickness estimates for the Pottsville Group range from 140 to 200 feet.

Water-Bearing Properties

Reported yields of 47 wells range from 2 to 832 gal/min. The median yields for domestic and nondomestic wells are 16 and 60 gal/min, respectively. Only two wells have yields less than 5 gal/min and five wells (11 percent) have yields greater than 100 gal/min.

Well depths range from 30 to 700 feet, and the deepest reported water-bearing zone is at 280 feet. The highest frequency of water-bearing zones occurs in the 51- to 100-foot interval; 75 percent of the wells penetrate at least one zone in this interval.

Water Quality

The chemical quality of this group was evaluated through six complete chemical analyses. Five samples (83 percent) exceed the EPA limit for both iron and manganese. All other constituents are below the maximum concentrations recommended for public supply by the EPA.

The results of seven field analyses indicate that water from this unit is moderately hard and comparatively low in dissolved solids.

Evaluation of the Aquifer

Figure 19 is a graph that compares the distribution of domestic well yields from the Pottsville, Allegheny, and Conemaugh Groups. It shows that, in general, well yields increase from the Conemaugh to the Pottsville, which is also the order of increasing percentage of sandstone in the rock units. Thus the Pottsville Group is the most favorable aquifer of the three groups for the development of moderate to large groundwater supplies. Very high concentrations of iron and manganese are a persistent problem.

MAUCH CHUNK FORMATION

Stratigraphy

The Mauch Chunk Formation generally consists of two members: a lower unit of interbedded sandstone, siltstone, shale, and mudstone, and an upper unit consisting of light-gray calcareous quartz sandstone. The Mauch Chunk is up to 300 feet thick.

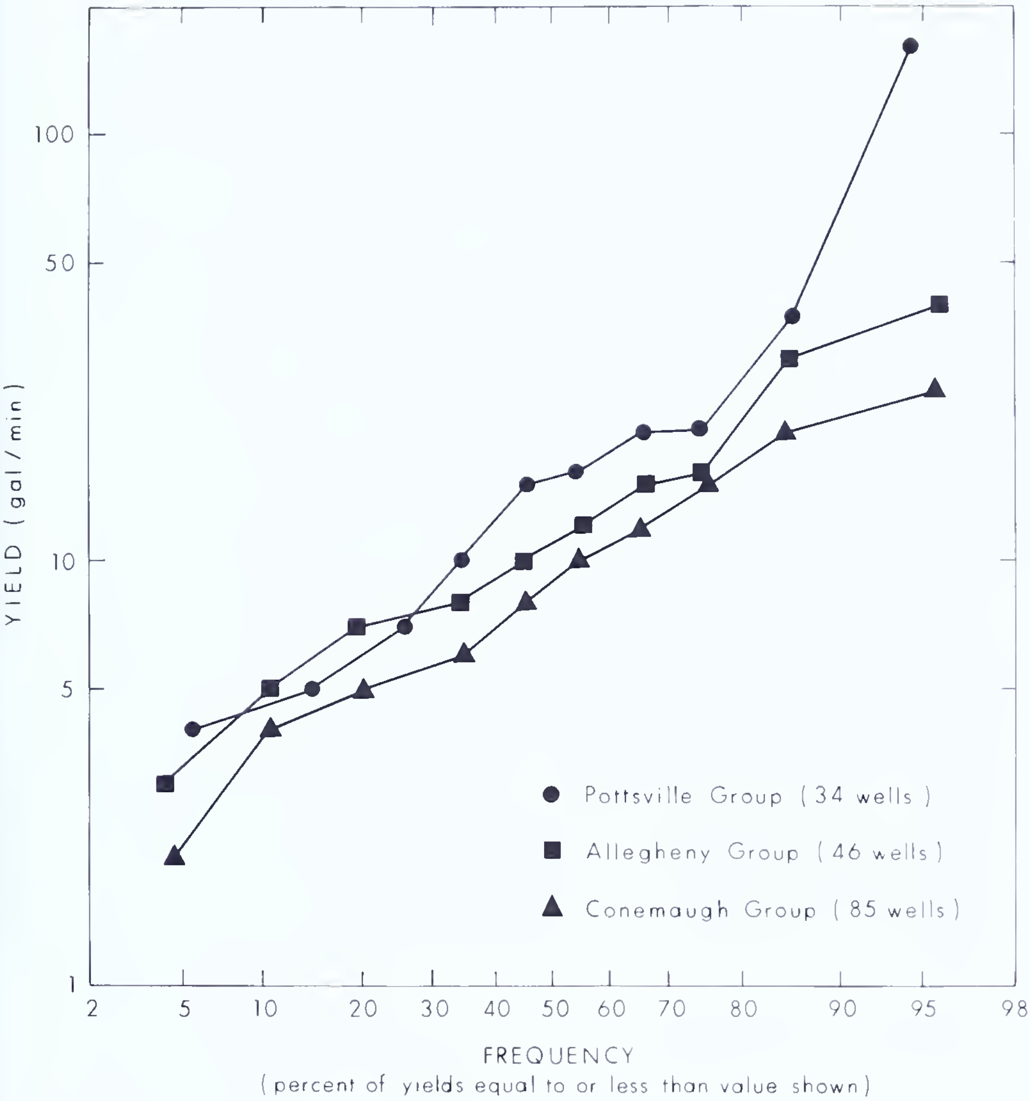


Figure 19. Percent frequency distribution of domestic well yields from the Conemaugh, Allegheny, and Pottsville Groups.

Water-Bearing Properties

Reported yields of seven wells range from 1 to 70 gal/min. Four of the seven wells (57 percent) have yields less than 5 gal/min. Well depths range from 200 to 420 feet, and the median is 230 feet.

Water Quality

All measured constituents in a single complete analysis are below maximum concentrations recommended for public supply by the EPA. A single field analysis indicates that the water is soft and has a moderate amount of dissolved solids.

Evaluation of the Aquifer

Much of the outcrop area of the Mauch Chunk Formation is wooded and sparsely populated. Thus the data for evaluating this unit are minimal. Small supplies of groundwater adequate for domestic use should be available.

BURGOON SANDSTONE

Stratigraphy

The Burgoon Sandstone is informally divided into two units: a lower member which consists of gray sandstone and minor interbedded gray shale, conglomerate, and mudstone, and an upper member of light-gray, fine- to medium-grained, well-sorted, pure quartz sandstone. The lower member is about 48 percent sandstone in Centre County (Glass, 1972).

Reported thicknesses for the upper member fall between 120 and 240 feet. Values for the lower member are between 570 and 800 feet.

Water-Bearing Properties

Reported yields of 45 wells range from 3 to 400 gal/min. The median yields for domestic and nondomestic wells are 10 and 88 gal/min, respectively. Only three wells (7 percent) have reported yields less than 5 gal/min, and eight (18 percent) have yields greater than 100 gal/min.

Depths of 47 wells range from 40 to 701 feet. The median depth of nondomestic wells is 275 feet, more than twice the median depth of domestic wells, which is 123 feet. Water-bearing zones are most frequently encountered in the 51- to 100-foot interval, and the deepest reported zone is at 465 feet.

Water Quality

Five complete chemical analyses were used to evaluate the quality of groundwater. Two samples exceed the EPA recommended limit for iron and three exceed the limit for manganese. All other constituents analyzed are below the maximum recommended concentrations.

The results of eight field analyses indicate that the water is soft and relatively low in dissolved solids.

Evaluation of the Aquifer

The Burgoon Sandstone is probably the best noncarbonate, consolidated-rock aquifer, and yields sufficient supplies of groundwater for public and industrial use in most areas. However, wells located on high ridges usually have marginal yields and deep water levels. Water from the Burgoon is soft, but many wells produce water containing excessive amounts of iron and manganese.

HUNTLEY MOUNTAIN AND ROCKWELL FORMATIONS

Stratigraphy

The Huntley Mountain Formation consists of greenish-gray to light-olive-gray sandstone and some thin beds of grayish-red siltstone or clay shale. The Rockwell Formation is predominantly buff, fine- to medium-grained, crossbedded, argillaceous sandstone with some shale and sporadic conglomerate beds. It is mapped in the southwestern part of the basin and is separated from the Huntley Mountain by an arbitrary boundary.

Each formation is reported to be about 600 feet thick.

Water-Bearing Properties

All information on water-bearing properties is based on data collected for the Huntley Mountain Formation; however, the properties of the Rockwell should be similar.

Reported yields of 55 wells range from 3 to 310 gal/min; the medians are 14 and 73 gal/min for domestic and nondomestic wells, respectively. Two wells have yields less than 5 gal/min and four have yields greater than 100 gal/min.

Nondomestic wells have a median depth of 371 feet, which is over 2.5 times the median depth of domestic wells of 141 feet. Well depths range from 55 to 571 feet. The deepest reported water-bearing zone is at 470 feet.

Water Quality

The quality of groundwater was evaluated through 14 complete analyses. Eight samples (57 percent) have excessive iron, six samples (42 percent) are above the limit for manganese, and two samples have more than 500 mg/L dissolved solids. The water is dominantly a calcium bicarbonate type, as shown in Figure 20.

Based on 19 field analyses, water from the Huntley Mountain Formation is soft and contains a low to moderate amount of dissolved solids.

Evaluation of the Aquifer

Figure 21 is a graph of the distribution of nondomestic well yields from the Burgoon Sandstone and the Huntley Mountain Formation. Although there is a slight separation in the two plots, there is no significant difference in reported yields from the two formations. Thus it is likely that the Huntley Mountain will generally be as good an aquifer as the Burgoon and yield adequate quantities of water for public and industrial use (>50 gal/min per well) at many locations.

About half of the wells drilled into this formation produce water that is high in iron or manganese.

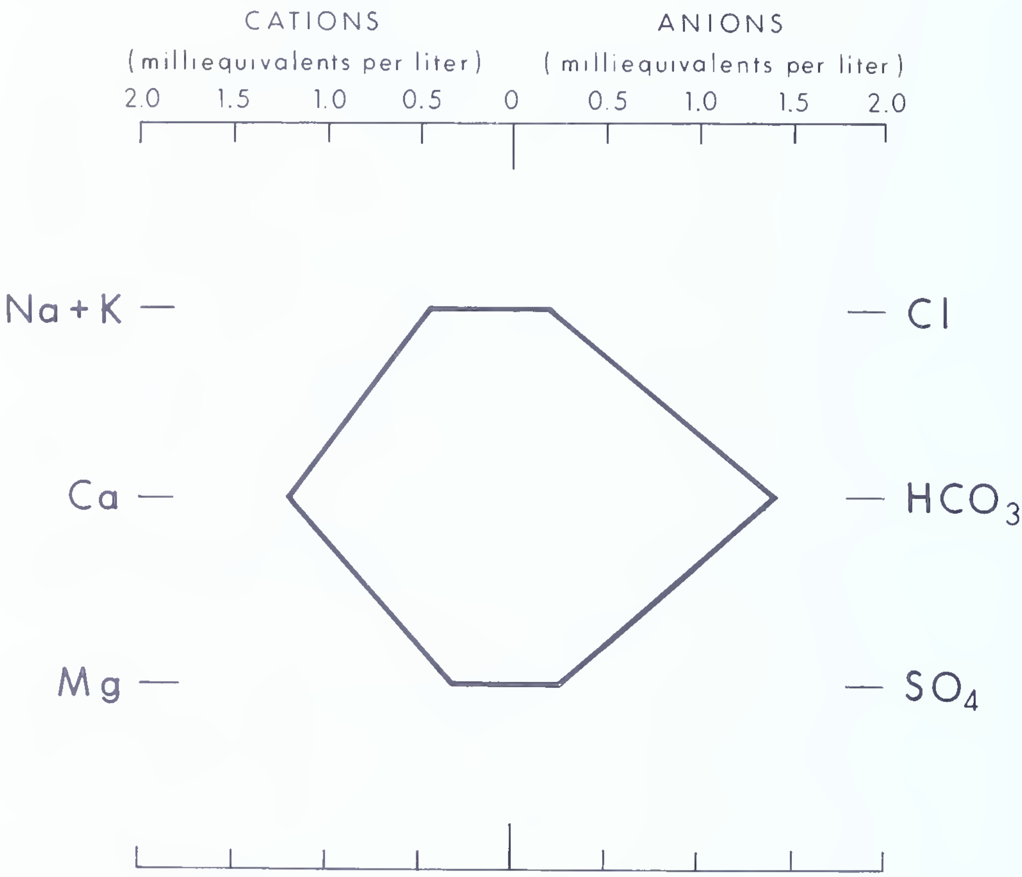


Figure 20. Median chemical character of groundwater from the Huntley Mountain Formation (based on 14 analyses).

SHENANGO FORMATION THROUGH OSWAYO FORMATION

Stratigraphy

These rocks are only present in a small area in Elk County and consist of greenish-gray, olive, and buff sandstone and siltstone in varying proportions.

Water-Bearing Properties

The median yield of five domestic wells is 20 gal/min and the range is from 16 to 30 gal/min. All of the wells are comparatively shallow, ranging in depth from 60 to 85 feet.

Water Quality

In one of the two complete analyses from this rock unit, the water exceeds the recommended limit for iron and manganese. All other measured constituents are within drinking standards.

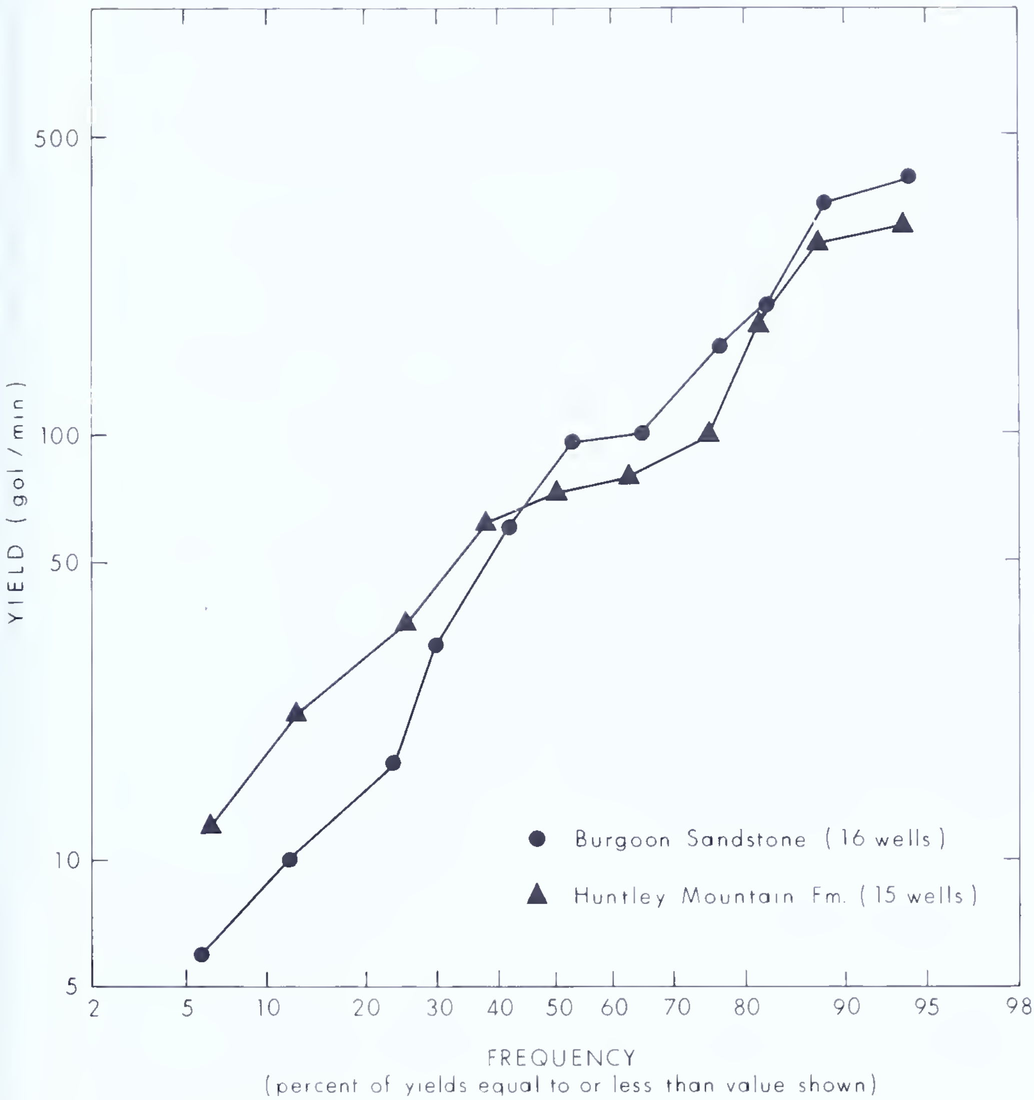


Figure 21. Percent frequency distribution of nondomestic well yields from Mississippian formations.

Two field analyses indicate that the water is soft and contains a moderate amount of dissolved solids.

Evaluation of the Aquifer

Limited data suggest that this aquifer should yield sufficient quantities of water for small to moderate supplies. High iron and manganese may be a problem.

CATSKILL FORMATION

Stratigraphy

The Catskill Formation is a succession of grayish-red sandstone, siltstone, and shale with some gray sandstone and conglomerate. The sand-

stone layers are generally fine grained and thin bedded. The thickness of this unit varies from about 1,200 to 2,000 feet.

Two members, the Irish Valley and Sherman Creek, are mapped in the southern part of the basin. The Irish Valley Member consists of a somewhat cyclic repetition of olive-gray marine sandstone, siltstone, and shale and red nonmarine siltstone, sandstone, and mudstone. The Sherman Creek Member is predominantly interbedded red mudstone, siltstone, and some sandstone.

Water-Bearing Properties

Reported yields of 397 wells range between 0 and 250 gal/min. The median yields for domestic and nondomestic wells are 10 and 30 gal/min, respectively. Slightly more than 20 percent (80 wells) have reported yields less than 5 gal/min and only 3 percent (11 wells) have yields greater than 100 gal/min.

The median depth of 382 domestic wells is 131 feet. Nondomestic wells have a median depth of 200 feet. Figure 22 gives the distribution of reported water-bearing zones in the Catskill. It shows that zones are most frequently encountered in the 51- to 100-foot depth interval; about 62 percent of the wells have reported zones in that interval. There is a small decline in the frequency of reported zones in the interval from 101 to 250 feet, after which

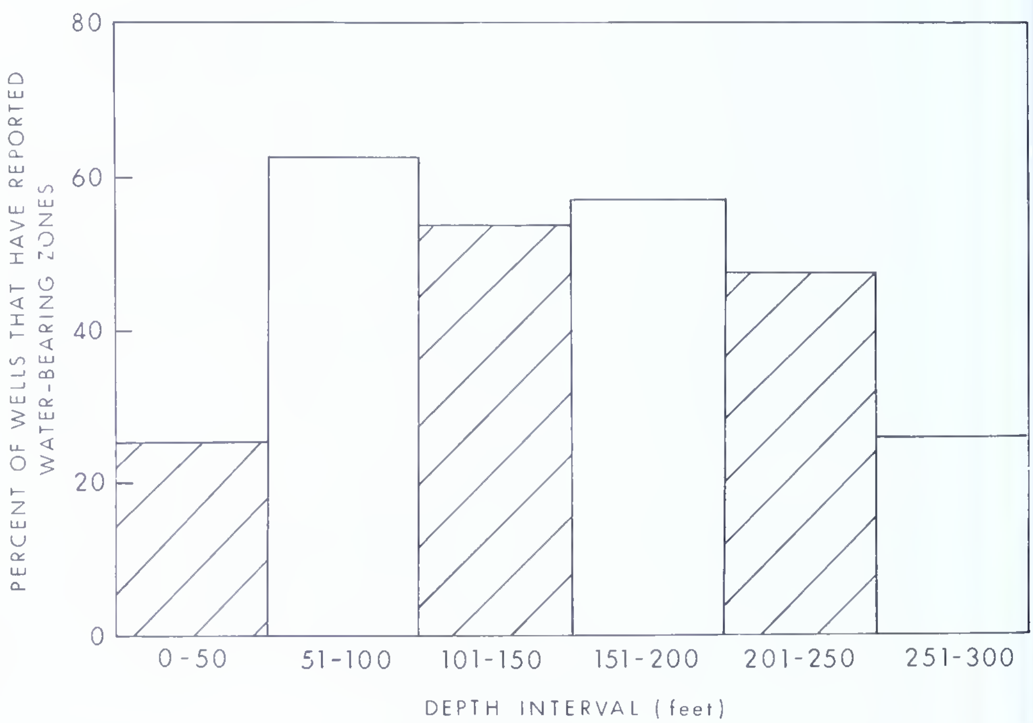


Figure 22. Percent of wells that have reported water-bearing zones per given depth interval in the Catskill Formation.

the number drops off considerably. The deepest reported water-bearing zone is at 535 feet.

Water Quality

One hundred complete chemical analyses were used to evaluate the quality of water from the Catskill Formation. The following constituents were found in concentrations exceeding EPA recommended amounts: manganese (25 samples), iron (14 samples), dissolved solids (4 samples), chloride (2 samples), and arsenic (1 sample). The water is predominantly a calcium bicarbonate type, as shown in Figure 23.

Based on 160 field analyses, water from the Catskill is soft to moderately hard and contains a moderate amount of dissolved solids.

Evaluation of the Aquifer

Figure 24 shows the percent frequency distribution of reported well yields from the Catskill Formation. About 82 percent of the wells drilled for pub-

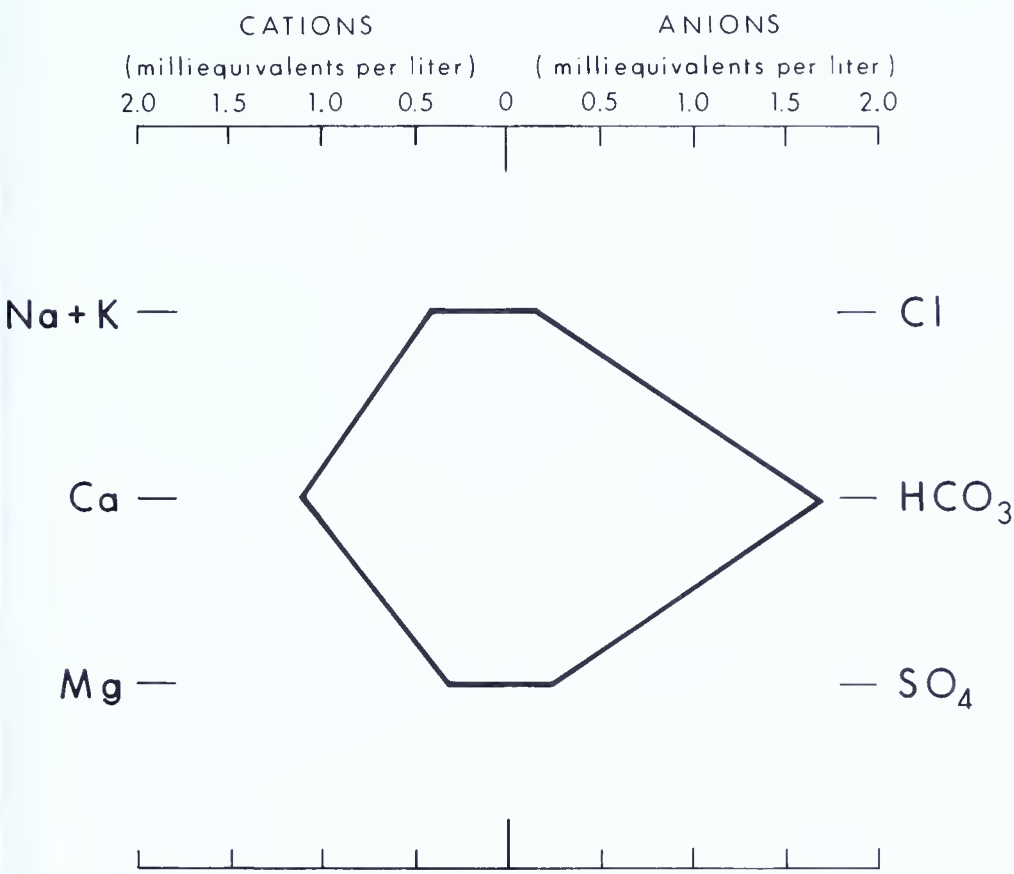


Figure 23. Median chemical character of groundwater from the Catskill Formation (based on 100 analyses).

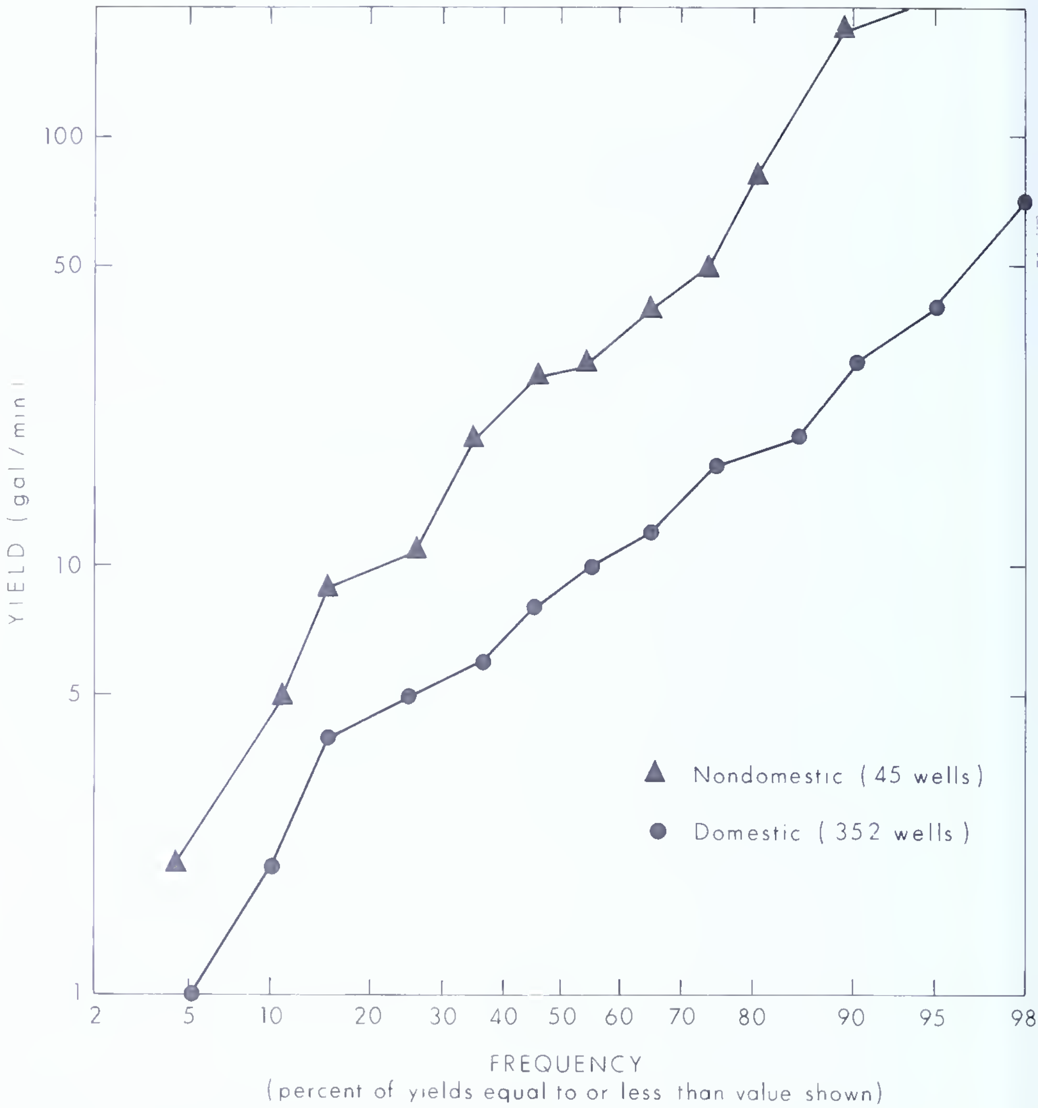


Figure 24. Percent frequency distribution of well yields from the Catskill Formation.

lic and industrial use have yields less than 100 gal/min and 25 percent of the domestic wells have yields of 5 gal/min or less. This suggests that a relatively large percentage of wells drilled in this formation will produce less than the desired amount of water; however, most supplies should be marginally adequate.

The water is usually of good quality, but high amounts of iron and manganese are a common problem.

LOCK HAVEN FORMATION

Stratigraphy

The Lock Haven Formation is composed of predominantly light olive gray, interbedded sandstone, siltstone, shale, and a few thin beds of conglomerate near the top. Fine-grained rocks (shale and siltstone) constitute about 70 percent of the unit.

Thickness estimates for this formation vary from a maximum of 4,460 feet in Lycoming County to 2,700 feet in Centre County.

Water-Bearing Properties

Yields range from 1 to 600 gal/min for the 201 wells inventoried. The median yield of domestic wells is 8 gal/min and the median yield for nondomestic wells is 25 gal/min. Twenty-one percent (39 wells) have yields less than 5 gal/min and only 2 percent (4 wells) have yields greater than 100 gal/min.

The median depths for both domestic and nondomestic wells are about 130 feet. Depths range from 30 to 500 feet in the 211 wells for which data were obtained. Information on water-bearing zones is very similar to that of the overlying Catskill Formation (Figure 22). Zones are common in the 51- to 250-foot range, and there is only a slight decrease with depth. The deepest reported zone is at 369 feet.

Water Quality

The results of 66 complete analyses were used to evaluate the quality of the water. Manganese, iron, and dissolved solids in 30, 23, and 3 samples, respectively, are present in concentrations exceeding recommended limits.

Eighty-eight field analyses indicate that the water is moderately hard and relatively high in dissolved solids compared to other noncarbonate rock units.

Evaluation of the Aquifer

The frequency plot of well yields from the Lock Haven Formation (Figure 25) is remarkably similar to that for the Catskill Formation (Figure 24). Thus the suggestion that many water supplies will be marginal with respect to yield also applies to the Lock Haven. This is significant because these two units combined underlie over half of the Appalachian Plateaus area of the basin.

The quality of water from the Lock Haven is somewhat worse than that from the Catskill; nearly half of the wells produce water high in iron and manganese.

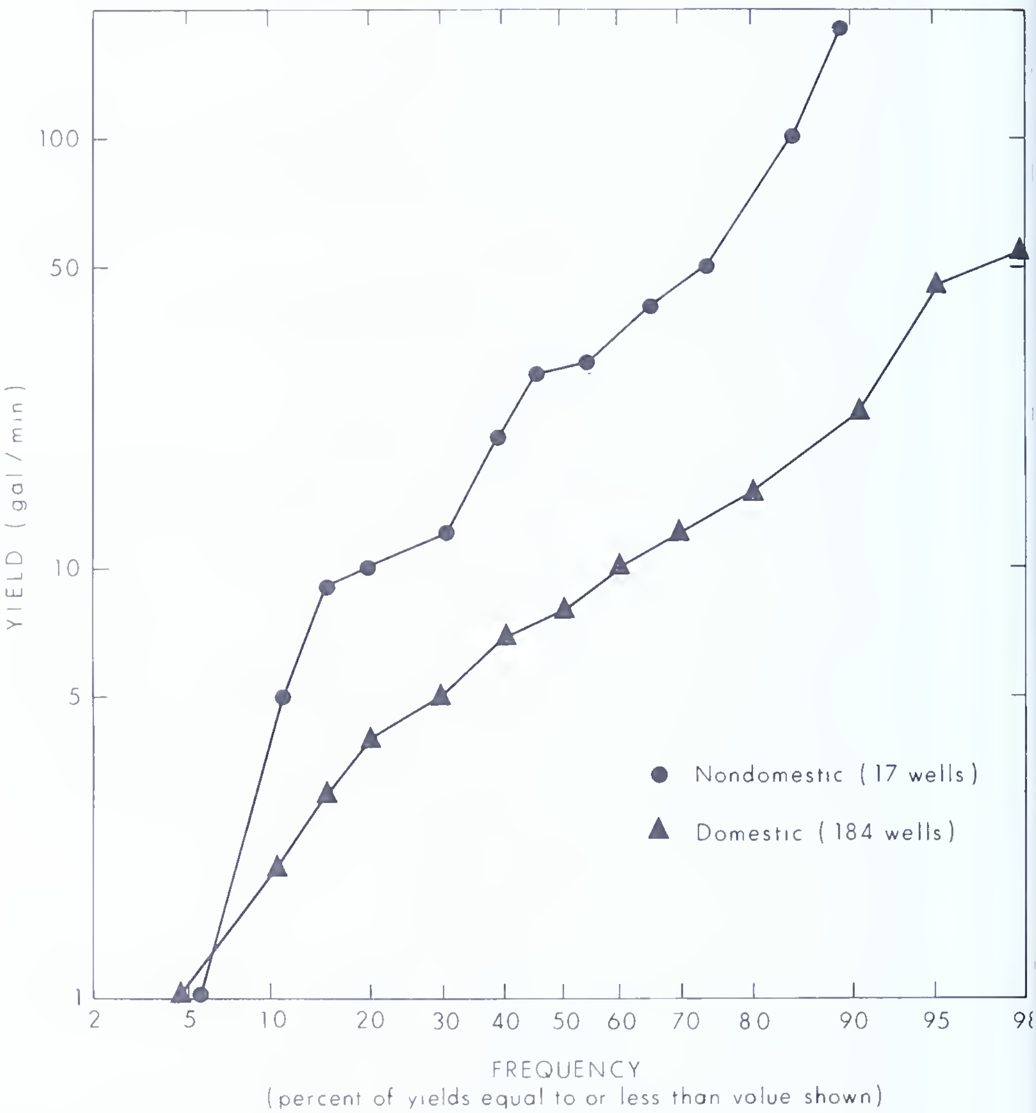


Figure 25. Percent frequency distribution of well yields from the Lock Haven Formation.

BRALLIER AND HARRELL FORMATIONS

Stratigraphy

The Brallier Formation consists of interbedded light-olive-gray shale and siltstone and some sandstone. The thickness varies from 900 to 1,900 feet.

The underlying Harrell Formation consists of dark-gray to black shale which is generally very fissile and about 100 to 200 feet thick.

Water-Bearing Properties

Reported yields of 41 wells range from 1 to 60 gal/min. The median yields for domestic and nondomestic wells are 5 and 30 gal/min, in that order.

Nearly 44 percent of the wells have yields less than 5 gal/min and only a single well has a yield greater than 100 gal/min.

The median depth of 41 wells is 150 feet. The deepest well is 560 feet deep and the deepest reported water-bearing zone is at 313 feet.

Water Quality

Five complete analyses were obtained for these formations from the Department of Environmental Resources laboratory. A single sample exceeds the limit for iron and three have excessive manganese.

The results of 15 field analyses indicate that the water is soft and has a moderate amount of dissolved solids.

Evaluation of the Aquifer

These formations have the lowest yielding potential of any rock unit in the basin. Most attempts at obtaining domestic supplies should be successful, but up to 45 percent could have marginal yields (less than 5 gal/min) for some uses.

Many wells produce water that is high in iron and manganese and some produce water containing excessive hydrogen sulfide.

TRIMMERS ROCK FORMATION

Stratigraphy

The Trimmers Rock Formation consists of about 1,900 feet of interbedded medium-gray to olive-gray siltstone, shaly siltstone, and shale. This formation is the eastern lateral equivalent of the Lock Haven, Brallier, and Harrell stratigraphic interval in the Valley and Ridge province. It is primarily mapped in Lycoming, Montour, and Northumberland Counties.

Water-Bearing Properties

Reported yields of 33 wells range from 1 to 183 gal/min, and the median is 5 gal/min. Fourteen, or 42 percent, have yields less than 5 gal/min and a single well has a yield greater than 100 gal/min.

The median depth of 35 wells is 185 feet and the depths range from 74 to 600 feet. Data on water-bearing zones from 32 wells indicate that zones are most abundant in the 51- to 150-foot depth interval, and the deepest zone is at 387 feet.

Water Quality

Ten complete analyses were used to evaluate the quality of water. A single sample exceeds the recommended limit for iron and five exceed the limit for manganese. All other constituents are within drinking-water standards.

The median hardness from 13 field analyses is 4 grains per gallon and the median specific conductance is 195 micromhos. These data indicate that the water is soft to moderately hard and relatively low in dissolved solids.

Evaluation of the Aquifer

Well yields from this rock unit are similar to those from the Brallier and Harrell Formations, which establishes the Trimmers Rock as an extremely poor aquifer.

The water quality should be adequate for most uses. Elevated amounts of manganese are the most persistent problem.

HAMILTON GROUP

Stratigraphy

The Hamilton Group consists of the Mahantango Formation, including the Tully Member, and the Marcellus Formation.

The Mahantango Formation is from 600 to 1,200 feet thick and is mainly composed of medium- to dark-gray shale and minor amounts of siltstone and limestone. The Tully Member, a primarily silty, gray, argillaceous limestone up to 210 feet thick, occurs in the uppermost part of the Mahantango.

The Marcellus Formation is dark-gray to black, very fissile shale which ranges in thickness from about 100 to 450 feet.

Water-Bearing Properties

Taylor and others (1982) found no significant statistical difference in yields from the Mahantango and Marcellus Formations. Therefore the information that follows is for the undivided Hamilton Group.

The yields of 108 wells range from 1 to 240 gal/min. The median yields are 10 and 30 gal/min for domestic and nondomestic wells, respectively. Thirty wells, or about 28 percent, have yields less than 5 gal/min. Seven wells, or about 6 percent, have yields greater than 100 gal/min.

Well depths range from 25 to 600 feet, and the medians are 150 and 200 feet for domestic and nondomestic wells, in that order. Forty percent of the domestic wells are less than 100 feet in depth and only 10 percent had to be drilled deeper than 300 feet.

Data on water-bearing zones for 75 wells indicate that zones are uniformly abundant from 51 to 250 feet, and that there is only a relatively small decline with depth. The deepest zone is at 300 feet.

Water Quality

Six complete chemical analyses were used to evaluate the quality of groundwater from this rock unit. One sample exceeds the EPA recommended limit for iron and three exceed the limit for manganese.

The median hardness from 47 analyses is 6 grains per gallon, which classifies the water as moderately hard. The median specific conductance is 340 micromhos.

Evaluation of the Aquifer

The yields of about 20 to 30 percent of the wells drilled for domestic use are marginal (less than 5 gal/min). Large supplies are possible, primarily from parts of the Mahantango, based on the fact that seven of 23 wells drilled for large supplies produce more than 100 gal/min.

Some wells yield water containing objectionable amounts of iron and manganese, and many yield water containing hydrogen sulfide.

ONONDAGA AND OLD PORT FORMATIONS

Stratigraphy

The Onondaga Formation consists of interbedded dark- to light-gray shale, which is calcareous in the upper part, and medium- to dark-gray argillaceous limestone. The formation is up to 100 feet thick.

The Old Port Formation underlies the Onondaga and consists, from bottom to top, of cherty gray limestone, dark-gray calcareous shale, gray medium-grained limestone containing lenses of black chert, and medium- to coarse-grained, white calcareous sandstone (the Ridgeley Member). The thickness of this unit varies from about 250 to 500 feet.

Water-Bearing Properties

Reported yields of 60 wells range from 2 to 500 gal/min. The medians are 20 and 89 gal/min for domestic and nondomestic wells, respectively. Only five wells have yields less than 5 gal/min and 12 have yields greater than 100 gal/min.

Well depths range from 29 to 348 feet. The median depth of 45 domestic wells is 105 feet and the median for 18 nondomestic wells is 182 feet. Slightly more than 38 percent of the wells are less than 100 feet in depth. The deepest reported water-bearing zone is at 330 feet.

Water Quality

Two of the four complete analyses used to evaluate the quality of water from these formations have iron and manganese above recommended limits.

The median hardness from 27 field analyses is 9 grains per gallon and the median specific conductance is about 340 micromhos. These data indicate that the water is hard and has a moderate amount of dissolved solids.

Evaluation of the Aquifer

Figure 26 shows the distribution of domestic well yields from Middle and Lower Devonian rock units. It is apparent from the graph that the Onondaga and Old Port Formations are a significantly better aquifer than the overlying Hamilton Group.

Only 11 percent of the wells drilled for domestic use have yields less than 5 gal/min and over half of the wells drilled for large supplies produce over 100 gal/min. Therefore, this should be a good rock unit for the development of wells yielding a sufficient amount of water for most uses. High iron and manganese may be a common problem.

Many of the higher yields from these formations will be from the Ridge-

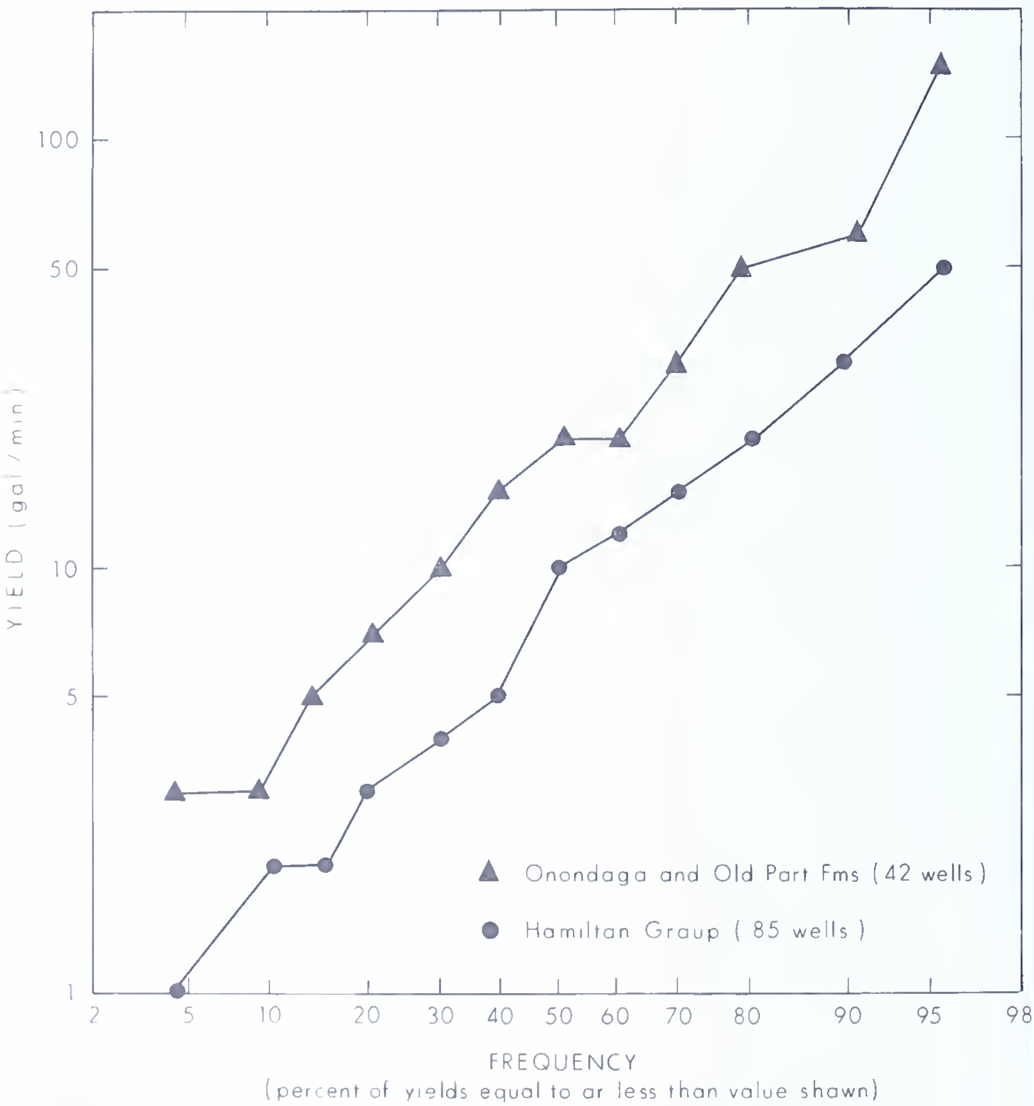


Figure 26. Percent frequency distribution of domestic well yields from Middle and Lower Devonian rock units.

ley Member of the Old Port. Wells completed in the Ridgeley often require screens to keep the well bore open because the sandstone crumbles easily.

KEYSER AND TONOLOWAY FORMATIONS

Stratigraphy

The lower part of the Keyser Formation consists of medium-gray, thin- to medium-bedded, nodular limestone. This is overlain by medium- to medium-dark-gray, laminated, argillaceous limestone and dolomite. The Keyser is about 100 feet thick.

The underlying Tonoloway Formation consists of laminated and thin- to medium-bedded, gray limestone. In the lower part there are considerable interbeds of calcareous shale and shaly siltstone. The thickness varies from approximately 440 to 700 feet.

Water-Bearing Properties

Reported yields of 48 wells range from 4 to 460 gal/min. The median yield for domestic wells is 20 gal/min and the median for nondomestic wells is 80 gal/min. Only one well has a reported yield less than 5 gal/min and 11, or 23 percent, yield 100 gal/min or more.

The depths of 54 wells range from 33 to 699 feet, and the median for domestic wells is 148 feet. Nondomestic wells are typically more than 45 percent deeper and have a median of 215 feet. About a third of the domestic wells obtain sufficient yields from depths of less than 100 feet and three had to be drilled deeper than 300 feet.

The deepest reported water-bearing zone from the 33 wells for which data are available is at 690 feet.

Water Quality

Five complete analyses were used to evaluate the quality of the water. A single sample has an excessive amount of iron and manganese. All other measured constituents are present in concentrations within drinking-water standards.

Water from domestic wells has a median hardness of 14 grains per gallon (14 wells) and a median specific conductance of 373 micromhos (11 wells). The deeper, nondomestic wells have a median hardness of 19 grains per gallon (11 wells) and a median specific conductance of 745 micromhos (8 wells). This suggests that hardness and dissolved solids increase significantly with depth.

Evaluation of the Aquifer

Figure 27 is a graph of the distribution of domestic well yields from Upper Silurian rock units. It shows that the Keyser and Tonoloway Formations are the highest yielding aquifer in this rock sequence.

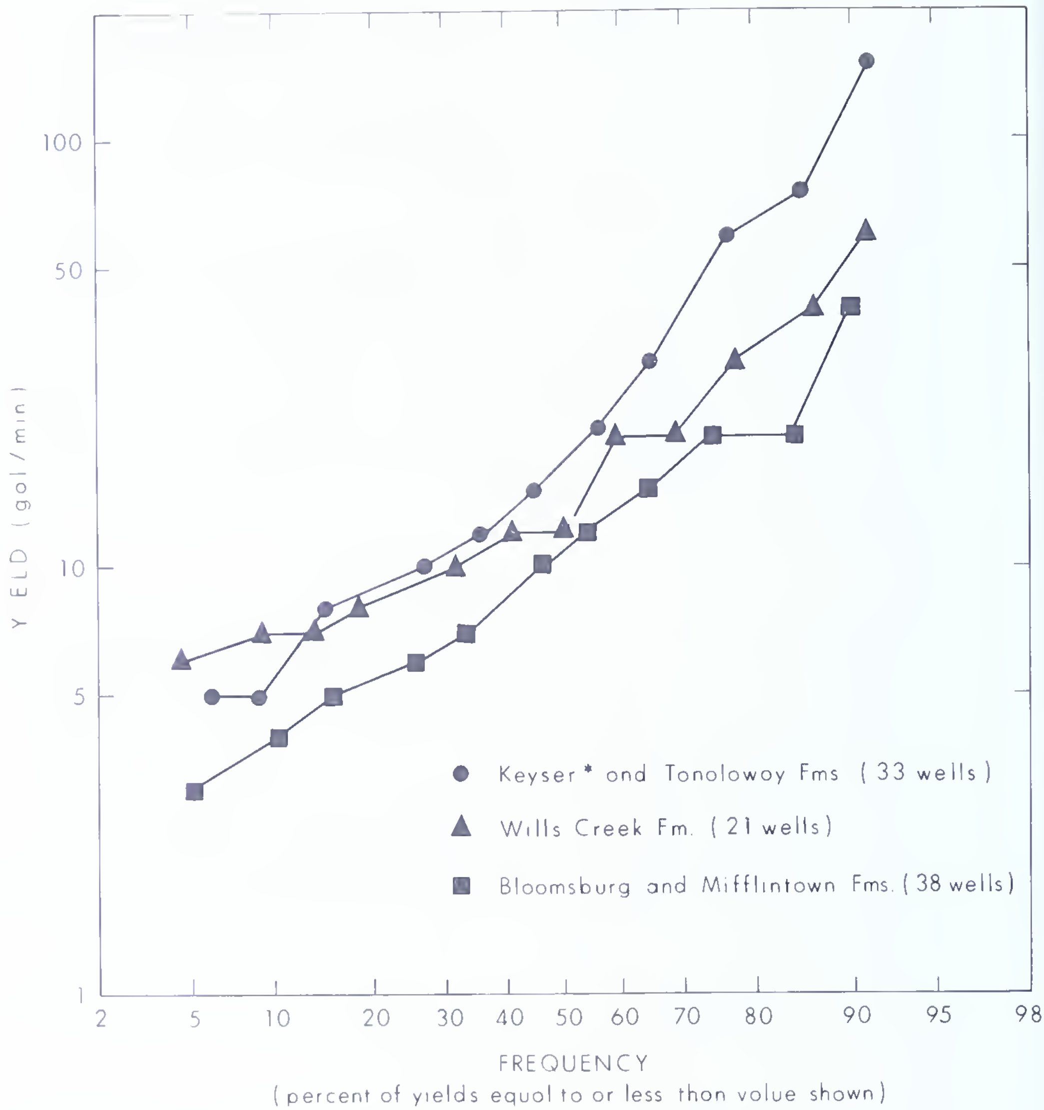


Figure 27. Percent frequency distribution of domestic well yields from Upper Silurian rock units. (*Keyser Formation is transitional from Upper Silurian to Lower Devonian.)

High yields can be developed from these formations, as demonstrated by the fact that nearly half of the wells drilled for large supplies produce more than 100 gal/min. Failures when drilling for domestic supplies should be infrequent, as only a single well has a reported yield less than 5 gal/min.

Water from these formations is very hard and high in dissolved solids, which probably increase in concentration with depth. The water requires treatment for many uses.

WILLS CREEK FORMATION

Stratigraphy

The Wills Creek Formation consists of medium-light-gray calcareous shale and siltstone; in the lower part, there are interbeds of grayish-red calcareous siltstone. The formation also contains interbeds of limestone, silicified siltstone, and dolomite.

The thickness of the unit ranges from 650 to 820 feet.

Water-Bearing Properties

Reported yields of 30 wells range from 6 to 130 gal/min. The median yields of domestic and nondomestic wells are 12 and 60 gal/min, respectively. Two wells have yields greater than 100 gal/min.

Well depths range from 40 to 328 feet. Slightly less than half of the domestic wells are 100 feet or less in depth. The medians are 121 and 204 feet for domestic and nondomestic wells, in that order. Based on reports from 23 wells, the deepest water-bearing zone is at 300 feet.

Water Quality

Five samples were collected for complete analysis. Concentrations of all measured constituents are below EPA recommended limits for public drinking-water supplies.

The results of 11 field analyses indicate that water from this formation is very hard (10 grains per gallon) and moderately high in dissolved solids (338 micromhos).

Evaluation of the Aquifer

The Wills Creek Formation generally yields sufficient groundwater of acceptable quality for small to moderate supplies; some larger supplies are also possible, as two of nine wells drilled for nondomestic purposes yield 100 gal/min or more. The water is hard to very hard and requires treatment for some uses.

BLOOMSBURG AND MIFFLINTOWN FORMATIONS

Stratigraphy

The Bloomsburg Formation is composed of grayish-red siltstone and silty claystone and some interbeds of very fine grained sandstone and algal limestone. Reported thicknesses range from 40 to 660 feet, and the unit is generally thinnest in the southwest.

The underlying Mifflintown Formation consists primarily of thin- to medium-bedded gray limestone and interbedded calcareous shale. The thickness of this formation ranges from 200 to 400 feet.

Water-Bearing Properties

Reported yields of 47 wells range from 3 to 300 gal/min. The medians for domestic and nondomestic wells are 11 and 100 gal/min, respectively. Four wells yield less than 5 gal/min and seven wells yield more than 100 gal/min.

The depths of 52 wells range from 55 to 358 feet. About 20 percent of the domestic wells are less than 100 feet deep and five wells are deeper than 300 feet. The median depths for domestic and nondomestic wells are 148 and 229 feet, respectively.

Water Quality

Results of eight complete analyses were used to evaluate the water quality. Concentrations of all constituents are within drinking-water standards.

Fourteen field analyses indicate that the water is hard (9 grains per gallon) and contains a moderate amount of dissolved mineral matter (280 micromhos).

Evaluation of the Aquifer

These rocks generally yield sufficient groundwater for small to moderate supplies. The data suggest that large supplies are possible; in six of nine nondomestic wells, the reported yields are greater than 100 gal/min.

An analysis of well data in the Juniata River basin suggests that the Bloomsburg is a slightly better yielding aquifer than the Mifflintown (Taylor and others, 1982).

Water from these units is generally of good quality; however, for some uses it requires treatment for hardness.

CLINTON GROUP

Stratigraphy

The Clinton Group consists predominantly of the Rose Hill Formation, which is made up of light-olive-gray to brownish-gray shale and some minor interbedded siltstone and sandstone. One or more grayish-red to reddish-black, hematitic sandstone or siltstone horizons are generally present. The Clinton is reported to be between 575 and 950 feet thick.

Water-Bearing Properties

Reported yields of 26 wells range from 1 to 60 gal/min. The median yield for all wells is 10 gal/min, and two wells have yields of less than 5 gal/min.

Well depths range from 97 to 400 feet, and the median is 200 feet. The deepest reported water-bearing zone, based on 20 wells, is at 280 feet.

Water Quality

Five samples were collected from the Clinton for complete chemical analysis. A single sample has iron and manganese above the recommended limit.

The median hardness from 10 field analyses is 4 grains per gallon, and the median specific conductance is 125 micromhos. These data indicate that water from this unit is soft to moderately hard and low in dissolved solids.

Evaluation of the Aquifer

The Clinton Group yields small to moderate amounts of water of acceptable quality for most uses. Large supplies (>100 gal/min) are probably difficult to obtain owing to the unit's lithologic character (predominantly shale) and to the fact that it underlies steep slopes in relatively high topographic positions.

TUSCARORA, JUNIATA, AND BALD EAGLE FORMATIONS

Stratigraphy

The Tuscarora, Juniata, and Bald Eagle Formations are prominent ridge and upland bench formers throughout much of the Valley and Ridge province.

The Tuscarora Formation consists mainly of fine- to coarse-grained white quartzites that are medium to thick bedded. The unit ranges in thickness from 100 feet in the Williamsport area to 550 feet in Centre County.

The Juniata Formation can usually be divided into two members: a lower member consisting of grayish-red siltstone interbedded with very fine to fine-grained sandstone, and an upper member composed of grayish-red, fine- to medium-grained, quartzose sandstone. The thickness of the Juniata ranges from 500 to about 1,200 feet.

The Bald Eagle Formation consists of gray to greenish-gray, fine- to coarse-grained sandstone and some conglomerate. Lower and upper parts have some interbeds of shale, shaly siltstone, and siltstone. It is about 700 to 800 feet thick.

Water-Bearing Properties

Reported yields of 34 wells range from 1 to 100 gal/min, and the median is 11 gal/min. Twenty-one percent of the wells have yields less than 5 gal/min and a single well has a yield of 100 gal/min.

Well depths range from 48 to 500 feet; the median is 201 feet. The deepest reported water-bearing zone, based on 22 wells, is at 370 feet.

Water Quality

Nine complete analyses were used to evaluate the quality of the water. A single sample, from the Juniata Formation, has excessive iron. The remaining constituents are present in concentrations within drinking-water standards.

The results of 15 field analyses indicate that the water is soft to moderately hard (4 grains per gallon) and low in dissolved solids (130 micromhos).

Evaluation of the Aquifer

These rock units generally underlie wooded ridges, and there has been only a minimal attempt to develop groundwater from them. The limited data that are available suggest that small to moderate supplies may be obtained from these units.

REEDSVILLE FORMATION

Stratigraphy

The Reedsville Formation consists of medium-gray, thin- to medium-bedded silty shale and shaly siltstone. There are a few interbeds of very fine grained sandstone. In parts of the basin the underlying Antes Formation, primarily black calcareous shale, is combined with the Reedsville. The formation is about 1,000 feet thick.

Evaluation of the Aquifer

Information was collected for only 19 wells, and no complete chemical analyses were obtained from this formation. The median yield is 10 gal/min and yields range from 1 to 50 gal/min. Based on this limited information, the Reedsville yields sufficient quantities of water for small to moderate supplies.

Field water-quality data indicate that the water is hard (7 grains per gallon) and contains a moderate amount of dissolved solids (260 micromhos). Excessive iron and manganese is probably a common problem, and occasionally the water contains objectionable amounts of hydrogen sulfide.

COBURN FORMATION THROUGH LOYSBURG FORMATION

Stratigraphy

The Coburn Formation through the Loysburg Formation is a sequence of Middle to Upper Ordovician carbonate rocks that are approximately 1,000

to 1,250 feet thick. In descending order, the formations and lithologies that occur in this stratigraphic interval are as follows: the Coburn Formation, medium-gray limestone; the Salona Formation, very dark gray to black, shaly limestone and calcareous shale; the Nealmont Formation, medium-gray fossiliferous limestone; the Benner Formation, light- to dark-gray, thick-bedded limestone; the Snyder Formation, light- to medium-gray limestone; the Hatter Formation, medium-gray argillaceous limestone; and the Loysburg Formation, light- to medium-gray, medium-bedded limestone overlying laminated, alternating limestone, dolomitic limestone, and dolomite.

Water-Bearing Properties

Reported yields of 48 wells range from 1 to 60 gal/min. The median yield is 12 gal/min, and about 15 percent of the wells produce less than 5 gal/min.

Depths range from 40 to 405 feet for 50 wells. Five wells are less than 100 feet deep and nine are greater than 300 feet. The deepest reported water-bearing zone is at 405 feet.

Water Quality

Results of 13 complete analyses were used to evaluate the water quality. The only constituents exceeding the recommended limit are iron (two samples) and manganese (one sample).

Twenty field analyses indicate that water from these formations is hard (median of 12 grains per gallon) and moderately high in dissolved solids.

Evaluation of the Aquifer

Data on only two low-yielding nondomestic wells are available from these units. Thus the maximum yielding potential cannot be evaluated. However, data from domestic wells suggest that small supplies of hard water can be developed.

BELLEFONTE AND AXEMANN FORMATIONS

Stratigraphy

The Bellefonte Formation consists of gray, very fine to fine-grained dolomite containing interbeds of fine- and medium-grained limestone. Bedding is usually medium to thick. Reported thicknesses range from 1,000 to 1,300 feet.

The underlying Axemann Formation consists of about 200 feet of comparatively pure, blue limestone interbedded with thin-bedded, impure, fine-grained dolomitic limestone.

Water-Bearing Properties

Reported yields of 47 wells range from 0 to 500 gal/min. The medians for domestic and nondomestic wells are 12 and 50 gal/min, respectively. Nine wells (about 20 percent) have yields less than 5 gal/min and six have yields greater than 100 gal/min.

Well depths range between 40 and 530 feet. The median for domestic wells is 200 feet, and nondomestic wells have a relatively deep median depth of 330 feet.

The deepest water-bearing zone is reported at 420 feet. Data from 40 wells suggest that zones are abundant to at least a depth of 350 feet in these formations.

Water Quality

Seven complete analyses were used to evaluate the quality of the groundwater. The concentrations of all measured constituents are within EPA recommended limits for drinking water.

The results of 20 field analyses indicate that the water is very hard (median hardness of 17 grains per gallon) and relatively high in dissolved solids (median specific conductance of 578 micromhos).

Evaluation of the Aquifer

About 32 percent of the wells drilled in the Bellefonte for large supplies have yields greater than 100 gal/min (Figure 28). Therefore, this should be a favorable unit for the development of public and industrial supplies. However, more than a quarter of the domestic wells produce less than 5 gal/min, which indicates that there are parts of this aquifer where yields are insufficient for many uses.

The water is very hard and high in dissolved solids and therefore may require treatment.

NITTANY AND STONEHENGE/LARKE FORMATIONS

Stratigraphy

The Nittany Formation is primarily medium- to dark-gray, thick-bedded dolomite containing chert and siliceous oolites. Reported thicknesses range from 850 to 1,200 feet.

The Stonehenge Formation consists of 200 to 700 feet of medium-gray to blue, thin- to medium-bedded limestone, and is laterally equivalent to the medium- to dark-gray, coarsely crystalline dolomite of the Larke Formation.

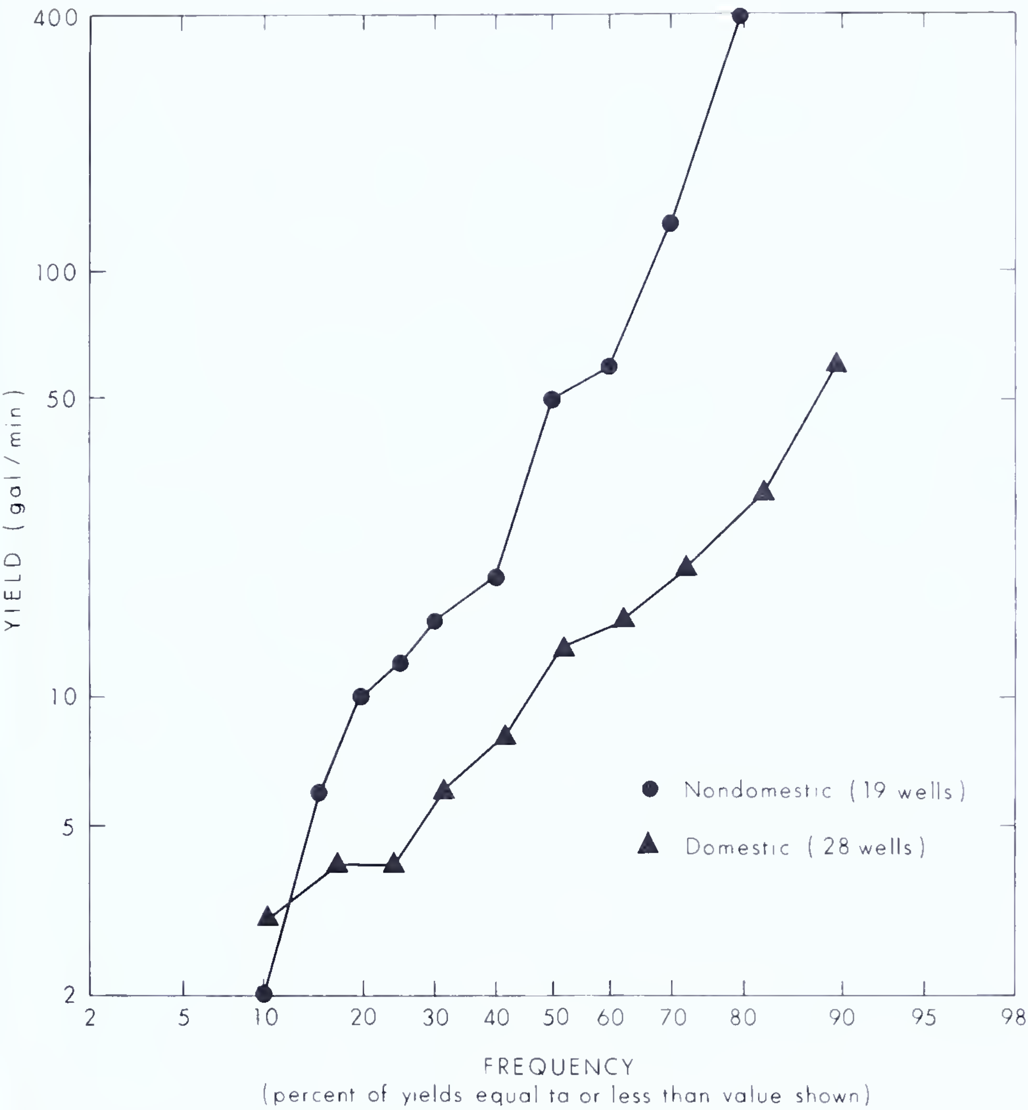


Figure 28. Percent frequency distribution of well yields from the Bellefonte Formation.

Water-Bearing Properties

Nine domestic wells have a median yield of 20 gal/min and a range of 5 to 60 gal/min. The median yield of 22 nondomestic wells is 538 gal/min, and the range is from 15 to 2,200 gal/min. Twenty-one of the 22 wells produce 100 gal/min or more.

The median well depths are 241 feet for domestic wells and 357 feet for nondomestic wells. Depths of 34 wells range from 83 to 609 feet; two wells are less than 100 feet deep and 15 are greater than 300 feet. The deepest reported water-bearing zone is at 405 feet.

Water Quality

The two samples collected for complete analysis have all constituents within EPA recommended limits.

Information from 18 field analyses indicates that the water is very hard (median of 12 grains per gallon) and moderately high in dissolved solids (median specific conductance of about 400 micromhos).

Evaluation of the Aquifer

The Nittany Formation apparently will consistently provide in excess of 100 gal/min to wells drilled for high yield, which makes it one of the best carbonate aquifers. Wood (1980, p. 29) reported, however, that a little less than half of the high-capacity wells pump some sand, and a few collapse or fill with sand.

The water is very hard and moderately high in dissolved solids, thus requiring treatment for some uses.

GATESBURG FORMATION

Stratigraphy

The Gatesburg Formation consists essentially of gray dolomite, limestone, and sandstone. Five members are generally recognized in this rock unit. They are as follows, in descending order: the Mines Member, gray dolomite and some chert; an upper sandstone member, cyclic repetitions of sandstone and dolomite; the Ore Hill Member, laminated to massive limestone and dolomite; a lower sandstone member, cyclic repetitions of sandstone and dolomite; and the Stacy Member, thick-bedded crystalline dolomite. The Gatesburg is about 1,475 to 1,750 feet thick.

Water-Bearing Properties

All wells inventoried for the Gatesburg Formation are nondomestic. Reported yields range from 15 to 8,000 gal/min; the median is 425 gal/min. Seventy-three percent of the wells have yields greater than 100 gal/min.

Well depths range from 100 to 502 feet, and the median is 304 feet.

Evaluation of the Aquifer

Figure 29 is a frequency plot of nondomestic well yields from the Nittany and Gatesburg Formations. It indicates that the Gatesburg is nearly as good an aquifer for very large supplies as the Nittany; about 25 percent of the reported yields in the Gatesburg are greater than 500 gal/min. This unit is not especially good for domestic supplies because of deep water levels and flowing-sand problems, which may add significantly to the cost of drilling (Wood, 1980, p. 30).

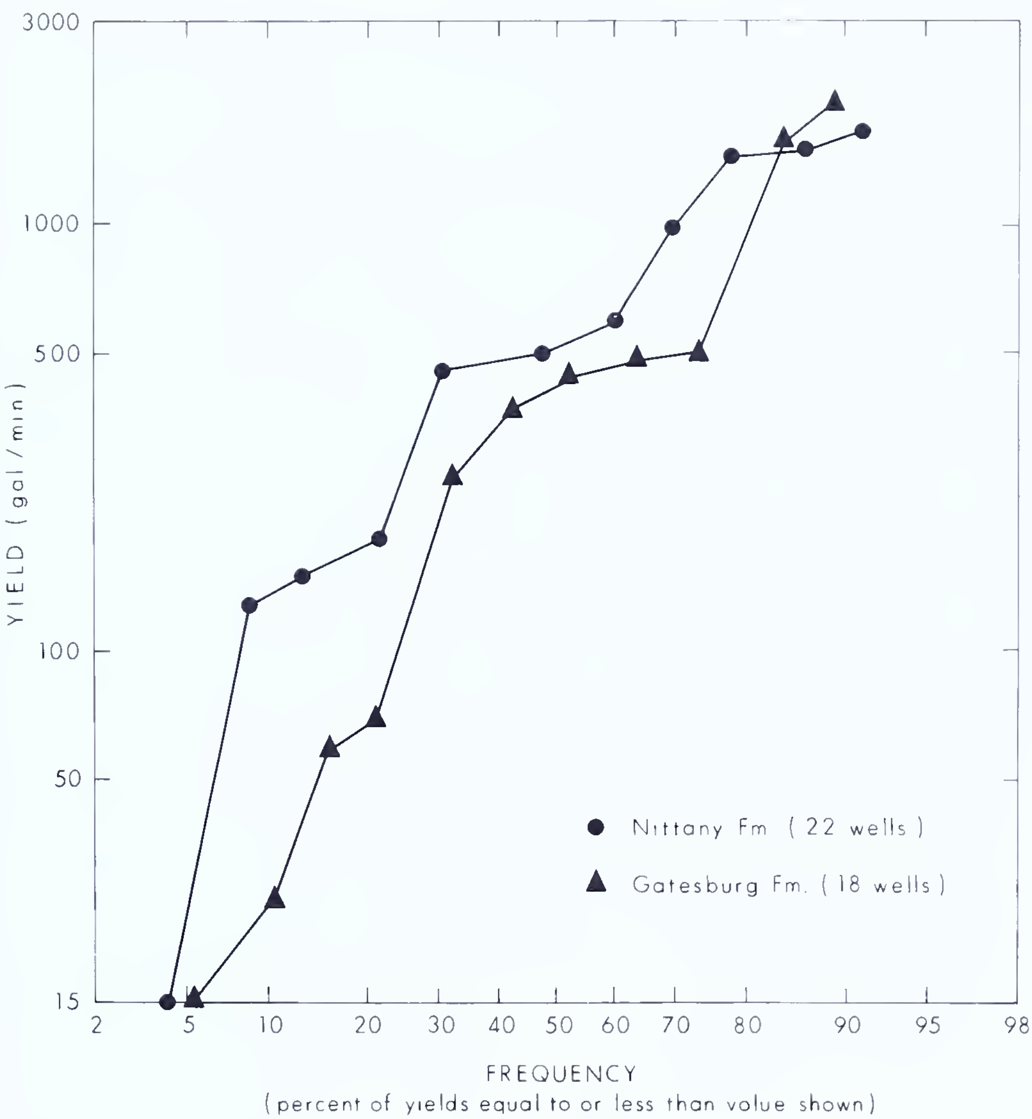


Figure 29. Percent frequency distribution of nondomestic well yields from the Nittany and Gatesburg Formations.

Water from this unit is very hard and relatively high in dissolved solids, thus requiring treatment for some uses.

WARRIOR FORMATION

Stratigraphy

The Warrior Formation consists of blue and gray, thin- to thick-bedded dolomite and some thin beds of siliceous shale or sandstone. The formation is about 1,300 feet thick.

Evaluation of the Aquifer

Only a single well providing minimal data was inventoried. Based entirely on lithologic considerations, this unit should yield small to moderate supplies of hard water.

MANAGEMENT OF WATER SUPPLIES

GROUNDWATER–QUANTITY MANAGEMENT

No sizable areas were identified in the basin where groundwater levels are progressively declining as a result of excessive groundwater withdrawals. Only a small fraction of the available groundwater is being used.

Based on the analysis of annual streamflow, on the average a groundwater discharge of at least 300 (gal/min)/mi^2 could be expected about 90 percent of the time. If only 25 percent of this discharge (a conservative amount) were developed by widely spaced wells, 845 Mgal/d could be obtained without seriously affecting groundwater levels or reducing streamflow. This is almost 15 times the estimated groundwater use in the basin in 1970.

There are, however, a few areas where water use is sufficiently intense that supplies have not been adequate during droughts of moderate length. For example, in the 1980–81 drought, which encompassed much of eastern Pennsylvania, many water companies in the basin experienced severe water shortages. In Centre County, which had the most severe problems, four systems that rely heavily on groundwater sources reported shortages; these were the Howard Borough Water Department, Harris Township Authority, State College Borough Authority, and Ferguson Township Water Authority.

The precipitation values for 1980 and 1981 measured at State College were 29.70 and 29.04 inches, respectively. These each represent a precipitation level of approximately 25-year recurrence (Figure 8). The probability of occurrence of two consecutive years with such low precipitation levels is considerably less. Even with this extremely low precipitation, there would have been an ample groundwater resource to meet most needs had the water companies developed sufficient excess capacity.

Most quantity problems involve localized overpumping of a single well or well field. These types of problems can be alleviated either by adding wells so that pumpage is spread over a larger area, by utilizing another source of supply to allow water levels to recover, or by reducing the water demand.

The Susquehanna River Basin Commission is the only governmental agency that presently has enabling legislation allowing the regulation of some groundwater withdrawals. In September 1976 the Commission adopted a regulation requiring compensation for certain consumptive water

uses during low-streamflow periods. The purposes of the regulation are protection of public health, stream quality control, economic development, protection of fisheries, recreation, dilution and abatement of pollution, prevention of undue salinity, and protection of the Chesapeake Bay.

Withdrawals from surface or groundwater of 100,000 gallons per day or more, from which more than 20,000 gallons are used consumptively, are covered by this regulation.

In addition, in the fall of 1978 the Commission adopted a policy on water conservation which sets forth project review criteria from which the Commission will evaluate any new or requested increase for the withdrawal of water from a surface or groundwater resource for public water supply utilities, industries, and irrigational usage.

GROUNDWATER–QUALITY MANAGEMENT

The natural quality of groundwater in the basin is generally acceptable for most uses. Some aquifers or zones within aquifers contain poor-quality water that is somewhat isolated from the better quality water. Wells should be constructed in such a fashion to maintain this isolation and not allow poor-quality water to migrate into aquifers containing water of usable quality.

Most man-induced water-quality problems are local in extent and can be minimized by constructing wells so that surface water cannot enter them. Such factors as adequate lengths, thickness, and type of casing in conjunction with adequate formation sealing material (usually cement grout) must be considered when constructing a well.

Point sources of groundwater contamination (hydrocarbon spills, malfunctioning septic tanks, etc.) must be identified and eliminated and their effects minimized through clean-up operations.

Nitrate contamination of groundwater as a result of heavy fertilization of croplands appears to be a problem in some of the valleys underlain by carbonate rocks. Agricultural practices that will minimize this problem need to be pursued.

CONCLUSIONS

Groundwater use in the West Branch Susquehanna River basin was about 57 Mgal/d in 1970. State Water Plan projections are for more than a 20 percent increase in domestic and public water use by 1990, most of which will come from groundwater.

The basin has an abundant water resource resulting from an average annual precipitation of approximately 40 inches. Total runoff accounts for roughly 60 percent of annual precipitation, or about 23 inches. Ground-

water flow constitutes an average of 65 percent of total runoff. Evapotranspiration averages about 17 inches.

Recharge to the sandstone and shale of the Appalachian Plateaus province averages 510 (gal/min)/mi^2. Valleys underlain by carbonate rock have an average recharge rate of 420 (gal/min)/mi^2. The combined rock types in the Valley and Ridge province are recharged at an approximate average rate of 280 to 380 (gal/min)/mi^2.

Groundwater levels are at a median depth of 18 feet in valleys, 55 feet under hillsides, and 80 feet under hilltops. Bedrock units that consist mainly of shale have the shallowest median water levels and those consisting of carbonates have the deepest.

Lithology, topography, and geologic structure influence the depth, size, and abundance of water-bearing zones and, therefore, well yields. Rocks that consist primarily of limestone or dolomite have the highest well yields, followed by sandstone and shale in that order. Yields of valley wells are two to three times higher than yields of wells located in other topographic settings. Geologic structures that have an important influence on well yields are faults, folds, fractures, and bedrock dip.

Groundwater quality is generally adequate for most uses. The major differences in natural chemistry occur between waters from primarily calcareous and primarily noncalcareous rock units.

Iron and manganese are the natural constituents in groundwater that most commonly exceed EPA recommended limits; 24 percent of the samples exceed the limit for iron and 34 percent exceed the limit for manganese. The presence of these constituents can result in the staining of bathroom fixtures, impart a brownish color to laundered goods, and affect the taste of beverages such as tea and coffee. Addition of an oxidizing agent to the water followed by filtration is the most common method used to remove iron and manganese from water supplies.

The most commonly reported groundwater-quality problems in the basin are, in decreasing order of prevalence: excessive iron and manganese, hydrogen sulfide, hardness, bacterial organisms from sewage, acid mine drainage, petroleum products from buried storage tanks, excessive nitrates, and landfill leachate.

Very large supplies of groundwater can be developed from alluvium, the Keyser and Tonoloway Formations, the Bellefonte and Axemann Formations, the Nittany and Stonehenge/Larke Formations, and the Gatesburg Formation. The development costs may be high in certain instances because some units require screens and others are difficult to drill.

Moderate to large supplies of groundwater are possible from the Pottsville Group, the Burgoon Sandstone, the Huntley Mountain and Rockwell Formations, the Onondaga and Old Port Formations, and the Wills Creek Formation.

Small to moderate amounts of groundwater can be produced from the Conemaugh Group, the Allegheny Group, the Shenango Formation through Oswayo Formation, the Catskill Formation, the Lock Haven Formation, the Hamilton Group, the Bloomsburg and Mifflintown Formations, the Clinton Group, the Tuscarora, Juniata, and Bald Eagle Formations, the Coburn Formation through Loysburg Formation, and the Warrior Formation.

Only small supplies are generally available from the Mauch Chunk Formation, the Brallier and Harrell Formations, the Trimmers Rock Formation, and the Reedsville Formation.

SOURCES OF INFORMATION ABOUT WATER

A variety of information on water supplies is available from the government agencies listed below. When requesting information it is important to give an accurate location of the site for which information is desired.

The Bureau of Topographic and Geologic Survey, Department of Environmental Resources, has information on the geology of the basin and has published reports that describe in detail the rocks that underlie the area and their hydrologic properties. Well drillers' logs and reports on new wells that have been drilled are also available.

The Bureau of Community Environmental Control, Department of Environmental Resources, can supply information on the chemical quality of groundwater, well construction requirements, and biological reports on well water. The bureau, through various regional offices, tests water samples for bacterial pollution. They also can advise effective corrective measures when pollution is reported.

The Division of State Water Plan, Bureau of Water Resources Management, Department of Environmental Resources, has information on stream discharges, flood data, reservoir requirements, and power plant discharges.

The Public Utility Commission, Bureau of Rates and Research, has information on some municipal water supplies, including source, average daily use, total annual use, and estimated future needs.

The U.S. Geological Survey has data on wells, springs, and streams and on the chemical quality of water.

Local well drillers and pump installers can provide prices and suggest the type of equipment needed to develop a water supply. They can also suggest the proper well diameter for the necessary pumping equipment. Pump installers can supply information concerning the size of the pump, depth of the pump setting, and pressure-tank capacity.

If the chemical analysis of the well water indicates treatment is necessary, commercial water-treatment companies can provide the necessary infor-

mation and equipment. Equipment for water treatment can be purchased or rented, and it will generally be serviced by the supplier if desired.

REFERENCES

Ashley, G. H. (1926), *Geology and mineral resources of the Punxsutawney quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 65, 145 p.

____________(1940), *Geology and mineral resources of the Curwensville quadrangle*, Pennsylvania Geological Survey, 4th ser., Atlas 75, 140 p.

Becher, A. E., and Taylor, L. E. (1982), *Groundwater resources in the Cumberland and contiguous valleys of Franklin County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 53, 67 p.

Berg, T. M., and Edmunds, W. E. (1979), *The Huntley Mountain Formation: Catskill-to-Burgoon transition in north-central Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Information Circular 83, 80 p.

Berg, T. M., Edmunds, W. E., Geyer, A. R., and others (1980), *Geologic map of Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Map 1, scale 1:250,000, 3 sheets.

Berg, T. M., and Glover, A. D. (1976), *Geology and mineral resources of the Sabula and Penfield quadrangles, Clearfield, Elk, and Jefferson Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 74ab, 98 p.

Butts, Charles, and Moore, E. S. (1936), *Geology and mineral resources of the Bellefonte quadrangle, Pennsylvania*, U.S. Geological Survey Bulletin 855, 111 p.

Colton, G. W. (1963), *Bedrock geology and surface structure of the Cedar Run quadrangle, Tioga and Lycoming Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Progress Report 164, scale 1:24,000.

Colton, G. W., and Luft, S. J. (1965), *Bedrock geology of the Slate Run quadrangle, Clinton, Lycoming, and Potter Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Progress Report 167, scale 1:24,000.

Edmunds, W. E. (1973), *Geology and mineral resources of the northern half of the Houtzdale 15-minute quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 85ab, 150 p.

Edmunds, W. E., and Berg, T. M. (1971), *Geology and mineral resources of the southern half of the Penfield 15-minute quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 74cd, 184 p.

Faill, R. T. (1979), *Geology and mineral resources of the Montoursville South and Muncy quadrangles and part of the Hughesville quadrangle, Lycoming, Northumberland, and Montour Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 144ab, 114 p.

Faill, R. T., Wells, R. B., and Sevon, W. D. (1977), *Geology and mineral resources of the Linden and Williamsport quadrangles, Lycoming County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 134ab., 66 p.

____________(1977), *Geology and mineral resources of the Salladasburg and Cogan Station quadrangles, Lycoming County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 133cd, 44 p.

Glass, G. B. (1972), *Geology and mineral resources of the Philipsburg 7-1/2 minute quadrangle, Centre and Clearfield Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 95a, 241 p.

Glass, G. B., Edmunds, W. E., Shepps, V. C., and others (1977), *Geology and mineral resources of the Ramey and Houtzdale quadrangles, Clearfield and Centre Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 85cd, 94 p.

Glover, A. D. (1970), *Geology and mineral resources of the southern half of the Clearfield 15-minute quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 84cd, 139 p.

Lloyd, O. B., Jr., and Carswell, L. D. (1981), *Groundwater resources of the Williamsport region, Lycoming County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 51, 69 p.

Lloyd, O. B., Jr., and Growitz, D. J. (1977), *Ground-water resources of central and southern York County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 42, 93 p.

Lohman, S. W. (1938), *Ground water in south-central Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 5, 315 p.

____________(1939), *Ground water in north-central Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 6, 219 p.

Lovering, T. S., and Goode, H.D. (1963), *Measuring geothermal gradients in drill holes less than 60 feet deep, East Tintic district, Utah,* U.S. Geological Survey Bulletin 1172, 48 p.

Meisler, Harold, and Becher, A. E. (1971), *Hydrogeology of the carbonate rocks of the Lancaster 15-minute quadrangle, southeastern Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 26, 149 p.

Pennsylvania Department of Environmental Resources, Bureau of Resources Programming (1979), *The State Water Plan—Subbasin 4, Upper Susquehanna River*, Bulletin SWP-5, 172 p.

____________(1979), *The State Water Plan—Subbasin 10, Lower West Branch Susquehanna River*, Bulletin SWP-11, 156 p.

____________(1980), *The State Water Plan—Subbasin 9, Central West Branch Susquehanna River*, Bulletin SWP-10, 158 p.

Seaber, P. R. (1968), *An appraisal of the ground-water resources of the Upper Susquehanna River basin in Pennsylvania*, U.S. Geological Survey Open-File Report, 85 p.

Stiff, H. A., Jr. (1951), *The interpretation of chemical water analysis by means of patterns*, Journal of Petroleum Technology, v. 3, no. 10, p. 15-17.

Taylor, A. R. (1977), *Geology and mineral resources of the Lock Haven quadrangle, Clinton and Lycoming Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 124a, scale 1:24,000.

Taylor, L. E.., Werkheiser, W. E., duPont, N. S., and Kriz, M. L. (1982), *Groundwater resources of the Juniata River basin, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 54, 131 p.

U.S. Department of Commerce, Environmental Data Service (published annually, 1941–70), *Climatological data, Pennsylvania.*

U.S. Environmental Protection Agency (1975), *National interim primary drinking water regulations*, Federal Register, v. 40, no. 248, December 24, 1975, p. 59566-59588.

____________(1976), *Quality criteria for water*, U.S. Government Printing Office, 256 p.

____________(1977), *National secondary drinking water regulations*, Federal Register, v. 42, no. 62, March 31, 1977, p. 17143-17147.

Ward, P. E., and Wilmoth, B. M. (1968), *Ground-water hydrology of the Monongahela River basin in West Virginia*, West Virginia Geological and Economic Survey River Basin Bulletin 1, 54 p.

Wells, R. B., and Bucek, M. F. (1980), *Geology and mineral resources of the Montoursville North and Huntersville quadrangles, Lycoming County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 143cd, 68 p.

Williams, J. H., and Eckhardt, D. A. (in preparation), *Groundwater resources of the Berwick-Danville area, Columbia, Luzerne, Montour, and Northumberland Counties, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report.

Wood, C. R. (1980), *Summary groundwater resources of Centre County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 48, 60 p.

Wood, C. R., Flippo, H. N., Jr., Lescinsky, J. B., and Barker, J. L. (1972), *Water resources of Lehigh County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Water Resource Report 31, 263 p.

GLOSSARY

Aquifer. A formation that yields significant quantities of water to wells and springs.

Baseflow. Discharge entering stream channels as flow from the ground-water reservoir; the fair-weather flow of streams.

Carbonate rocks. Rocks composed dominantly of the carbonate minerals calcite and dolomite. Limestone and dolomite are the most common rocks of this type.

Dip of beds. The angle at which the formation or bed is inclined from the horizontal, measured at a right angle to the strike or trend of the formation or bed.

Discharge, groundwater. The process by which water is removed from the saturated zone; also the quantity of water removed.

Drawdown. The lowering of the water level in a well caused by pumping.

Evapotranspiration. Water withdrawn from a land area by direct evaporation from water surfaces and moist soil, and by plant transpiration.

Fault. A fracture or fracture zone along which there has been displacement of the two sides relative to each other. The displacement may be a few inches or many miles.

Formation. A fundamental unit in rock-stratigraphic classification. It is a body of rock characterized by lithologic homogeneity; it is prevailingly tabular and is mappable at the earth's surface or traceable in the subsurface.

Fracture. A break in the rock.

Glaciation. Alteration of the earth's surface through erosion and deposition by glacier ice.

Groundwater reservoir. An aquifer or a group of related aquifers underlying a given area.

Group. A stratigraphic unit consisting of two or more formations.

Hardness. A chemical property of water, caused mostly by the presence of calcium and magnesium, which increases the amount of soap needed to produce a lather. Water that has a hardness, calculated as grains per gallon of calcium carbonate, less than 3.5 is soft; between 3.5 and 7.0 is moderately hard; between 7.1 and 10.5 is hard; and greater than 10.5 is very hard. Values may be converted to milligrams per liter by multiplying by 17. Hardness values used in this report were determined in the field by use of a Calgon Speedy kit for testing water hardness. (Use of a brand name is for identification purposes only and does not imply endorsement by the Pennsylvania Geological Survey.)

Igneous rock. A rock that has solidified from molten material.

Metamorphic rock. A rock derived from preexisting rocks by a change in mineral composition or texture caused by heat and/or pressure.

Outwash. Sediment deposited by meltwater streams beyond active glacier ice.

Overdraft. An excessive lowering of the water level or artesian head in an aquifer caused by excessive withdrawal.

Paleozoic Era. One of the major divisions of geologic time, spanning the time period from approximately 570 million to approximately 240 million years ago.

Permeability. The capacity of a material to transmit a fluid.

pH. The negative logarithm of the hydrogen-ion concentration. A pH of 7.0 indicates neutrality of a solution. Values higher than 7.0 denote alkaline solutions; values lower than 7.0 indicate acidic solutions.

Physiographic province. A region of similar geologic structure and topography.

Porosity. The ratio of the volume of interstices in a rock to its total volume, expressed as a percentage.

Primary openings. Openings or voids existing when the rock was formed. In sedimentary rocks, openings result from the shape and nature of the original sediment and the way the particles are fitted together.

Recharge, groundwater. The process by which water is added to the saturated zone; also the quantity of water added.

Runoff. That part of the precipitation that appears in streams. It is the same as streamflow unaffected by diversions, dams, or other works of man.

Saturated zone. The zone in which interconnected interstices are saturated with water.

Secondary openings. Voids produced in rocks subsequent to their original formation by solution, weathering, or breaks in the rock.

Specific capacity. The yield of a well, in gallons per minute, divided by the drawdown of water level in the well, in feet.

Specific conductance. A measure of the capacity of water to conduct an electrical current. It varies with concentration and degree of ionization of the constituents.

Stream-gaging station. A gaging station where a record of discharge of a stream is obtained. Within the U.S. Geological Survey this term is used only for those gaging stations where a continuous record of discharge is obtained.

Surface water. Water on the surface of the earth.

Till. Nonstratified sediment carried or deposited by a glacier.

Transpiration. The process by which vapor escapes from the living plant, principally the leaves, and enters the atmosphere.

Water table. The upper surface of the zone of saturation, which is the zone in which openings in permeable rocks are filled with water.

TABLE 13. CHEMICAL ANALYSES OF GROUNDWATER

(Results are in milligrams per liter unless otherwise indicated)

Well number	Date of collection	Aquifer[1]	pH	Arsenic (As)	Aluminum (Al)	Alkalinity ($CaCO_3$)	Cadmium (Cd)	Calcium (Ca)	Chloride (Cl)	Chromium (Cr)	Dissolved solids	Fluoride (F)	Hardness ($CaCO_3$)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)	NH_3, as N	NO_2, as N	NO_3, as N	Potassium (K)	Sodium (Na)	Sulfate (SO_4)	Total organic carbon	Zinc (Zn)
BRADFORD COUNTY																										
Br-126	7/21/81	Olh	7.7	<.005	.04	200	<.0005	42	5	<.01	276	.13	148	.03	<.005	.08	14.3	<.01	.08	.002	.02	1.7	25	10	24	.02
127	7/21/81	Dlh	8.0	<.005	.02	196	<.0005	52.5	47	.03	338	.16	174	.42	<.005	.06	16.7	.02	.19	.002	.02	2.32	28	65	25	.02
130	7/21/81	Olh	7.6	<.005	.02	136	<.0005	32.1	1	.01	196	.17	123	.08	<.005	.02	9.6	.01	.15	.002	.32	1.74	11.7	10	25	.03
132	7/21/81	Olh	7.9	<.005	.05	210	<.0005	51	5	.01	330	.13	147	1.04	<.005	.14	11.2	.01	.23	.002	.02	1.04	44	10	18	.02
176	8/24/81	Olh	7.5	<.005	.06	130	<.0005	38.7	3	<.01	144	<.10	122	.07	<.005	.05	8	.01	.06	.014	.09	1	11	5	---	.02
178	8/24/81	Olh	7.1	<.005	.03	90	<.0005	24.7	3	<.01	106	.12	80	.09	<.005	.02	4.9	.01	.01	.002	1.38	1.12	9.7	5	---	.03
180	8/24/81	Olh	7.7	<.005	.02	156	<.0005	47.9	3	<.01	166	<.10	157	.05	<.005	.01	10.4	<.01	.01	.002	.18	1.28	4.9	5	---	.02
184	8/25/81	Dlh	7.1	<.005	.03	100	<.0005	38.7	6	<.01	132	<.10	116	.05	<.005	.01	6.8	<.01	.01	.002	2.16	1.36	5.8	10	---	.11
186	8/25/81	Olh	7.7	<.005	.06	132	<.0005	37.7	5	<.01	150	<.10	125	.09	<.005	.31	8.9	<.01	.01	.002	.02	.98	9.6	5	---	.03
230	8/25/81	Qal	7.5	.010	.04	272	<.0005	123	183	<.01	678	<.10	330	.10	<.005	.01	24	.02	.01	.002	13.86	2.88	112	35	---	.02
232	8/25/81	Qal	7.9	.008	.06	112	<.0005	26.5	2	<.01	140	<.10	82	.34	<.005	.14	4.3	.01	.15	.002	.02	.64	15.2	5	---	.02
235	8/25/81	Qal	7.6	<.005	.07	288	<.0005	66.4	12	<.01	426	<.10	352	1.69	<.005	.84	27	.01	.15	.002	.04	1.54	51	75	---	.09
242	8/25/81	Olh	7.8	<.005	.06	184	<.0005	42.4	2	<.01	260	.10	148	.77	.009	.68	10.3	<.01	.09	.002	.02	1.04	27	20	---	.02
CAMBRIA COUNTY																										
Ca-210	9/16/80	Pcc	7.6	<.001	.06	152	<.003	0.5	14	.01	---	.12	<20	.77	.10	.16	.10	.05	.01	.002	.06	.14	83.6	35	---	.92
213	9/16/80	Pcc	7.1	<.001	.04	72	<.003	30.5	17	.01	186	.15	78	.15	<.05	.01	4.6	<.01	.01	.002	.20	0.5	5.6	10	---	.01
214	9/16/80	Pcg	7.1	<.001	.07	88	<.003	24	3.0	.02	148	<.10	72	.19	<.05	.01	5.6	.05	.01	.002	.20	0.6	2.4	5	---	.14
220	9/17/80	Pcc	7.4	<.001	.05	186	<.003	76.5	29	.04	308	.12	200	1.54	<.05	.37	8.3	.02	.01	.002	.20	1.14	4.73	15	---	.02
224	9/17/80	Pcc	7.1	<.001	.04	138	<.003	43	8.0	<.01	192	.12	142	.12	<.05	.19	10.1	.01	.01	.004	.30	.96	3.96	15	---	.02
229	9/17/80	Pcg	7.1	<.001	.13	138	<.003	37.4	1.0	<.01	180	.18	123	.12	<.05	.24	8.2	.01	.01	.002	.24	1.02	3.08	10	---	.01
233	9/18/80	Pcc	7.4	<.001	.07	190	<.003	58.6	4.0	.04	260	.15	178	.04	<.05	.02	10	.02	.01	.002	.22	1.1	3.63	10	---	.01
237	9/18/80	Pcg	7.6	.003	.07	196	<.003	51.6	4.0	.02	266	.68	178	.16	<.05	.05	13	.01	.02	.002	.04	1.06	5.28	5	---	.03
241	9/18/80	Pcg	7.5	<.001	.09	176	<.003	48.3	2.0	.02	226	.20	169	.15	<.05	.01	13	<.01	.01	.002	.26	1.4	3.52	10	---	.19
246	9/24/80	Pcg	7.1	<.001	.05	168	.003	80	2.0	.02	434	.20	---	.36	<.05	.12	40	<.01	.10	.002	.06	.20	124	170	---	<.01
253	9/24/80	Pcg	6.6	<.001	.07	68	<.003	34.6	14	.01	200	<.10	107	.12	<.05	.02	6.0	.02	.13	.006	1.57	1.06	2.6	30	---	<.04
255	9/25/80	Pcg	6.9	<.001	.15	116	<.003	489	4.0	.02	980	.12	654	.45	<.05	1.75	39.7	.02	.07	.002	.02	2.16	1.5	510	---	.02
CAMERON COUNTY																										
Cm- 29	6/30/81	Dck	7.4	<.005	.07	86	<.001	47	49	.01	314	<.10	146	.16	<.005	.03	13.5	0	.08	.002	1.0	1.8	22	40	0	.05
33	6/30/81	Dck	7.1	.006	.04	78	<.001	16.8	2	.01	120	<.10	71	.08	<.005	.04	7.1	.01	.08	.004	.16	.66	5.6	5	0	.04
35	6/30/81	Dck	6.7	<.005	.24	30	<.001	8.8	2	.01	68	<.10	34	.16	.005	.03	2.8	0	.06	.002	.24	.92	1.5	5	0	.04
37	7/1/81	Dck	6.7	<.005	.13	26	<.001	6.4	2	.01	56	<.10	26	.10	<.005	.02	2.7	.01	.06	.002	.78	1.36	3.8	<5.0	0	.03
CENTRE COUNTY																										
Ce-258	10/8/80	On	7.4	<.005	.06	246	<.001	51.7	4.0	<.01	232	<.10	---	.03	<.005	.01	31.7	<.01	.01	.002	1.88	.92	1.1	10	---	<.01
265	10/9/80	Ock	7.5	.028	.43	160	<.001	15.3	4.0	<.01	170	.14	51	.40	<.005	.01	6.7	<.01	.06	.004	.44	3.14	57.9	20	---	.02
266	10/9/80	Dck	7.5	<.005	.06	246	<.001	54.1	3.0	<.01	270	---	---	.06	<.005	.01	38.1	<.01	.01	.01	.17	2.84	9.0	---	---	.01
271	10/10/80	Dh	7.6	<.005	.07	176	<.001	40	2.0	<.01	220	.22	146	.06	<.005	.04	12.2	<.01	.21	.002	.02	.58	14.5	10	---	.01
275	10/22/80	Dlh	7.9	.028	.04	250	<.001	17.8	27	<.01	380	.25	55	.23	<.005	.03	5.8	.01	.24	<.002	<.02	2.34	105	25	---	.01
291	10/9/80	Obf	7.5	<.005	.08	168	<.001	32.7	10	<.01	248	.18	184	.01	<.005	<.01	22.7	.02	.01	<.002	2.0	.98	2.5	10	---	.01
296	10/10/80	Obl	7.3	<.005	---	262	<.001	64.3	16	<.01	374	.28	242	.06	<.005	.01	38.7	.02	.01	<.002	5.94	1.32	5.1	15	---	1.4
301	10/8/80	Obh	6.2	<.005	1.1	20	<.001	4.0	1.0	<.01	100	.18	32	.83	<.005	.43	5.5	<.01	.01	<.002	.08	1.04	9.3	35	---	.04

307	10/8/80	Ock	6.6	<.005	1.1	46	<.001	13.1	5.0	<.01	50	<.10	45	.09	<.005	.01	5.0	<.01	.01	<.002	1.3	1.22	4.3	15	---	.03
308	10/8/80	Olh	7.4	<.005	.06	144	<.001	33.5	1.0	<.01	126	.17	107	.03	<.005	.07	10.6	<.01	.08	.002	.02	1.6	11	15	---	.01
310	10/8/80	Olh	6.7	<.005	.07	82	<.001	16.7	15	<.01	66	.30	---	2.55	<.005	.97	6.7	.02	.12	.002	.02	1.7	13.3	10	---	.03
324	10/21/80	Obe	7.5	<.005	.03	236	<.001	58.2	29	<.01	372	<.10	200	.05	<.005	<.01	35.1	<.01	.02	<.002	3.96	1.82	10.2	20	---	.01
326	10/21/80	On	7.3	<.005	.06	156	<.001	74.2	11	<.01	352	.18	220	.03	<.005	<.01	16.7	.01	.02	<.002	1.5	1.66	2.1	95	---	.16
334	10/23/80	Oj	7.4	<.005	.05	100	<.001	22	2.0	<.01	164	.14	106	.06	<.05	.01	11.9	<.01	.01	<.002	.10	1.96	2.3	15	---	.02
352	10/22/80	Obl	7.3	<.005	.08	290	<.001	104	36	<.01	388	.13	300	.01	<.05	.01	24.9	<.01	.02	.004	3.3	3.28	12.3	50	---	.01
358	10/22/80	Obf	7.6	<.005	.08	248	<.001	62.7	11	<.01	302	.11	200	.01	<.05	.01	28.7	<.01	.01	<.002	3.08	1.3	3.1	15	---	<.01
362	10/23/80	Ooo	7.4	<.005	.13	214	<.001	49.4	9	<.01	302	<.10	214	<.01	<.05	.01	26.8	.01	.01	<.002	6.16	2.98	4.1	10	---	.03
379	10/22/80	Ock	7.5	<.005	.06	110	<.001	63.4	4.0	<.01	314	.16	173	.03	<.05	.10	12.8	<.01	.03	<.002	.04	3.34	33.3	125	---	.01
382	10/23/80	Ock	7.6	<.005	.07	178	<.001	38.7	2.0	<.01	232	.32	154	.26	<.05	.03	15.5	<.01	.16	<.002	.02	2.5	11	15	---	.26
383	10/23/80	Olh	7.8	<.005	.13	162	<.001	9.9	15	<.01	210	.34	40	.07	<.05	.04	3.7	<.01	.28	<.002	2.02	1.36	59.5	5	---	<.01
CLEARFIELO COUNTY																										
Cf-198	9/24/80	Pa	5.8	<.001	.11	10	<.003	8.5	24	.02	112	<.10	20	.110	<.05	.03	2.6	.01	.01	.002	.62	1.14	11.3	5	---	.04
200	9/24/80	Pcg	7.1	<.001	.12	90	<.003	31.4	3.0	.02	130	.12	80	.28	<.05	.27	4.8	.01	.01	.002	.08	.84	1.6	5	---	.01
208	9/25/80	Pa	4.9	<.001	.31	6	<.003	7.2	27	.02	130	<.10	32	.26	<.05	.28	3.2	.04	.01	.002	1.1	2.54	12.7	20	---	.11
227	9/24/80	Pcg	7.3	<.001	.08	126	<.003	80.2	4.0	.02	284	.13	240	1.39	<.05	.18	20.4	.02	.01	.002	.02	1.4	5.1	15	---	.04
228	9/24/80	Pcg	7.3	<.001	.05	178	<.003	284	36	.04	584	<.10	300	.27	<.05	.15	25.6	.03	.22	.004	.10	1.78	6.6	165	---	.05
242	10/1/80	Pcg	8.4	<.001	.07	304	<.003	67	21	<.01	410	.44	<20	.37	<.05	.03	1.8	.01	.39	.002	.02	.98	118	25	---	<.01
246	10/1/80	Pcg	7.2	<.001	.08	144	<.003	31.7	2.0	<.01	188	.19	123	.10	<.05	.02	8.0	<.01	.03	.002	.16	.94	5.6	10	---	.01
259	9/25/80	Pcg	6.7	<.001	.07	78	<.003	21.7	3.0	.01	124	.14	60	5.55	<.05	.29	5.5	.01	.12	.004	.02	.90	2.3	5	---	<.01
264	9/24/80	Pcg	7.5	<.001	.08	138	<.003	43.8	3.0	.01	202	.12	112	.16	<.05	.02	6.7	<.01	.15	.002	.06	.86	5.0	10	---	<.01
269	10/1/80	Pp	6.4	<.001	.06	50	<.003	14.7	11	<.01	106	.19	51	2.14	<.05	.14	5.3	---	.03	.002	.08	1.34	0.6	5	---	.01
272	10/1/80	Pa	6.9	<.001	.05	102	<.003	77.3	5.0	.03	396	.20	182	2.22	<.05	.15	15.3	---	.03	.002	.06	1.2	0.9	170	---	.02
275	10/2/80	Pa	6.5	<.001	.06	64	<.003	14	2.0	<.01	96	.19	53	6.66	<.05	.83	5.1	.03	.09	.002	.02	1.52	0.4	10	---	.01
CLINTON COUNTY																										
Cn-106	6/2/81	Ock	6.0	<.005	.03	11	<.003	5.7	2	.01	42	.10	15	.11	<.05	.03	1.1	.01	.01	.02	.28	.82	.90	15	1.0	.02
107	6/2/81	Ock	6.5	<.005	.11	68	<.003	26.8	2	.01	134	<.10	59	.03	<.05	.01	2.8	.01	.01	.002	1.16	1.2	10.8	26	2.8	.03
108	6/2/81	Ock	6.5	<.005	.09	52	<.003	25.9	8	<.01	98	<.10	56	.02	<.05	.01	2.6	<.01	.01	.002	1.54	<10	<10	10	11	.03
111	6/2/81	Ock	6.6	.01	.05	78	<.003	34.5	50	<.01	176	.10	87	1.39	<.05	1.18	4.1	.01	.01	.002	.02	<10	27.3	10	8	.03
112	6/2/81	Mb	6.3	<.005	.01	46	<.003	22.8	2	<.01	78	.13	57	.06	<.05	.01	2.8	<.01	.09	.002	.02	1.3	.76	17	<1.0	.01
115	6/8/81	Ock	6.3	<.005	.05	94	<.003	28.4	33	.01	224	.19	121	3.51	<.05	.07	6.3	.01	.06	.002	.02	1.24	28.8	35	1.7	<.01
116	6/8/81	Qal	6.1	<.005	.09	15	<.003	6.9	6	<.01	52	.35	40	.30	<.05	.02	2.2	<.01	.06	.002	.98	1.10	6.8	15	2.2	<.01
117	6/8/81	Qal	6.9	.008	.17	98	<.003	44	66	<.01	244	<.10	149	.07	<.05	.46	6.4	<.01	.06	.002	.02	1.44	15.8	5	<1.0	<.01
124	6/9/81	Ock	6.7	<.005	.07	70	<.003	18.1	4	<.01	86	<.10	73	.03	<.05	.01	4.6	<.01	.01	.002	.70	.44	4.9	<5.0	1.7	<.01
132	6/1/81	Olh	7.3	<.005	.08	144	<.003	15.8	2	<.01	160	<.10	44	.09	<.05	.06	3.5	.02	.11	.002	.02	.46	42.4	9	1.3	.03
134	6/1/81	Olh	7.2	<.005	.06	126	<.003	41.7	2	.02	176	.30	129	.02	<.05	.05	11.4	.02	.11	.002	.02	.60	11.7	31	<1.0	.06
135	6/1/81	Olh	6.6	<.005	.05	82	<.003	21.5	1	.01	138	.21	70	.55	<.05	.35	6.5	<.01	.09	.002	.42	.70	10.9	19	1.2	1.0
138	6/2/81	Ock	6.2	<.005	.04	22	<.003	6.6	1	<.01	32	.32	24	.03	<.05	.02	1.6	<.01	.08	.002	.12	.60	2.2	9	2.0	.07
141	6/2/81	Mmc	6.8	<.005	.04	78	<.003	36.3	11	<.01	118	<.10	82	.02	<.05	.02	2.5	<.01	.08	.076	2.12	2.02	4.8	5	6.6	.02
148	6/2/81	Qal	6.3	<.005	.03	56	<.003	60.3	20	<.01	328	<.10	174	.30	<.05	.06	11	.02	.21	.002	11	2.44	5.3	55	1.4	.02
155	6/2/81	Obh	8.4	<.005	.02	120	<.003	5.9	2	<.01	160	.11	22	.11	<.05	.03	2.3	<.01	.34	.002	.02	.50	44.6	10	8.7	.01
156	6/9/81	Obf	7.0	<.005	.12	128	<.003	35.7	8	<.01	240	<.10	161	.09	<.05	.01	15.1	.02	.08	.002	1.44	.64	5.1	20	1.8	.01
157	6/8/81	Obl	6.9	<.005	.13	124	<.003	52	5	<.01	220	<.10	152	.06	<.05	.02	2.3	.01	.01	.002	5.06	.50	6.3	5	2.4	.02
159	6/8/81	Obl	6.9	<.005	.08	110	<.003	45	9	<.01	200	<.10	138	.03	<.05	.02	4.7	.01	.08	.002	3.74	.40	6.5	5	6.6	.72
162	6/9/81	Obf	7.0	<.005	.17	288	<.003	79.5	26	<.01	580	<.10	404	.05	<.05	.02	41	.03	.08	.002	26.46	1.8	19.8	45	1.7	.01
167	6/7/81	Obf	6.9	<.005	.17	246	<.003	58.4	37	<.01	438	<.10	328	.07	<.05	.01	34.4	.02	.08	.002	3.96	1.2	13.7	25	1.2	.93
169	6/9/81	Obf	7.1	<.005	.08	230	<.003	53.6	6	<.01	322	<.10	308	.04	.065	.01	29.4	.02	.08	.002	3.08	.64	5.5	25	1.8	.06
172	6/10/81	Ocn	7.1	<.005	.09	308	<.003	107	6	<.01	464	.10	384	.05	<.05	.01	17.2	.02	.13	.02	.94	.58	8.2	60	1.2	.01
178	6/8/81	OSkm	6.5	<.005	.08	56	<.003	18	2	.02	124	<.10	62	.78	<.05	.10	2.8	.03	.08	.002	.02	.46	7.4	10	<1.0	.02
179	6/8/81	OSkm	6.7	<.005	.08	60	<.003	15.7	2	<.01	112	.35	65	.19	<.05	.60	4.7	.02	.08	.002	.04	.52	7.8	10	<10	.01
184	6/8/81	OSkm	6.9	<.005	.20	70	<.003	13.6	1	<.01	98	<.10	51	.06	<.05	.02	2.7	.02	.30	.006	.06	.24	10.6	<5.0	1.2	.02
195	6/9/81	Olh	6.7	<.005	.17	78	<.003	19.7	2	<.01	182	<.10	102	.34	<.05	.19	10.1	.02	.13	.002	.02	.58	11.7	35	<1.0	.02
205	6/9/81	MOhm	6.3	<.005	.17	38	<.003	7.6	1	.02	48	.37	34	.30	<.05	.02	2.1	.02	.01	.002	.42	.58	5.0	10	<1.0	.03
206	6/9/81	Mb	6.4	<.005	.08	60	<.003	21.3	5	<.01	106	<.10	73	5.19	<.05	.67	3.2	.03	.01	.002	.08	1.66	6.8	20	1.0	.10
208	6/9/81	Ock	6.0	<.005	.07	32	<.003	10.1	8	<.01	68	<.10	51	.05	<.05	.06	3.1	.04	.01	.002	1.58	1.24	5.9	5.0	2.6	.04
210	6/10/81	Olh	7.4	<.005	.25	194	<.003	18.4	2	<.01	194	.10	80	.88	<.05	.08	7.3	.01	.19	.004	.02	<10	55.8	10	<1.0	.04
211	6/10/81	Olh	8.4	.026	.09	194	<.003	1.8	2	<.01	214	<.10	<20	.04	<.05	.02	.70	<.01	.13	.002	.02	.38	99.4	5	<1.0	.01
213	6/10/81	Olh	7.2	.006	.11	126	<.003	13.2	2	<.01	156	.31	48	.17	<.05	.03	3.0	.01	.10	.002	.02	.82	43.4	5	2.4	.02

TABLE 13. (CONTINUED)

Well number	Date of collection	Aquifer[1]	pH	Arsenic (As)	Aluminum (Al)	Alkalinity ($CaCO_3$)	Cadmium (Cd)	Calcium (Ca)	Chloride (Cl)	Chromium (Cr)	Dissolved solids	Fluoride (F)	Hardness ($CaCO_3$)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)	NH_3, as N	NO_2, as N	NO_3, as N	Potassium (K)	Sodium (Na)	Sulfate (SO_4)	Total organic carbon	Zinc (Zn)
Cn-214	6/10/81	Obh	7.0	<.005	.22	146	<.003	7.3	6	<.01	214	.50	42	.18	<.05	.07	3.0	.01	.38	.002	.02	.74	68.1	20	1.3	.06
216	6/18/81	OSkm	7.5	<.005	.03	150	<.003	55.1	13	<.01	220	<.10	181	.14	<.05	.01	7.0	.03	.01	.002	1.54	.82	6.6	24	9.1	.03
218	6/16/81	OSkm	7.6	<.005	.05	124	<.003	63.8	41	<.01	170	<.10	208	.03	<.05	.01	6.9	<.01	.01	.002	1.94	.76	6.1	36	6.0	.28
220	6/16/81	Ock	8.3	<.005	.05	126	<.003	8.7	2	<.01	170	.10	18	.08	<.05	.02	1.7	<.01	.10	.002	.02	1.14	50.6	13	1.2	.01
221	6/17/81	MOhm	6.8	<.005	.03	50	<.003	14.6	3	<.01	86	<.10	44	.39	<.05	.01	2.7	<.01	.01	.002	.18	.46	2.2	5	1.2	.01
226	6/9/81	Ock	6.3	<.005	.15	46	<.003	14.5	23	<.01	146	.14	62	.62	<.05	.06	3.9	.01	.08	.002	1.06	1.20	18.9	10	2.3	.04
230	6/10/81	Ock	6.6	.007	.05	60	>.003	5.1	158	<.01	354	.10	<20	.13	<.05	.03	1.2	<.01	.10	.002	.02	1.4	126	15	1.5	<.01
234	6/17/81	Ock	7.1	<.005	.05	82	>.003	37.6	74	<.01	374	<.10	156	.08	<.05	.17	11.8	<.01	.01	.002	.30	1.02	14.9	8	<1.0	.34
241	6/17/81	Ock	7.2	<.005	.03	76	>.003	5.9	11	<.01	172	<.10	46	.09	<.05	.02	2.8	<.01	.01	.002	3.96	1.10	48.2	8	2.7	.02
243	6/29/81	MOhm	7.8	.009	.06	110	<.001	34.9	34	<.01	182	.18	65	.16	<.05	.07	3.4	.04	.13	.002	.02	.96	37.3	18	---	.04
244	6/29/81	MOhm	6.5	.009	.05	38	<.001	20	2	<.01	128	<.10	71	.8	<.05	.01	5.3	.03	.01	.002	.28	.84	3.9	35	---	.14
246	6/29/81	MOhm	6.7	<.005	.03	54	<.001	16.8	10	.04	124	<.10	62	.46	<.05	.03	5.1	.02	.11	.036	.52	.70	7	14	---	.03
247	6/29/81	MOhm	7.7	<.005	.05	100	<.001	100.4	819	.03	1760	---	316	.56	<.05	.13	13.4	.01	.27	.002	.02	2.72	376.2	<5.0	---	.11
251	6/23/81	Ocn	7.9	<.005	<.01	166	<.003	70.4	6	<.01	214	<.10	173	.06	<.05	.01	5.1	.02	.08	.002	2.64	.64	10.5	75	3.3	.03
252	6/23/81	Obl	7.6	<.005	.02	130	<.003	50.9	4	<.01	188	1.9	137	.03	<.05	.01	6.1	<.01	.08	.002	2.86	.56	5.5	10	3.3	.53
254	6/23/81	Mb	6.2	<.005	.01	10	<.003	9.9	18	<.01	74	2.3	17	.07	<.05	.01	.90	.02	.08	.002	.62	.86	11.9	5	1.2	.03
277	6/16/81	Obl	7.8	<.005	.39	130	<.003	34.5	14	<.01	222	<.10	160	.20	<.05	.02	13.4	<.01	.01	.002	1.32	1.0	3.6	10	1.5	.01
283	6/17/81	Ocn	7.3	<.005	.01	130	<.003	52.1	4	<.01	176	<.10	156	.07	<.05	.02	2.5	<.01	.01	.004	4.18	1.38	1.7	9	5.8	.13
284	6/17/81	Ocn	7.4	<.005	<.01	230	<.003	101.3	31	<.01	378	<.10	242	.04	<.05	.01	4.1	<.01	.01	.002	4.18	.92	10.4	13	6	<.01
285	6/17/81	Obf	7.6	<.005	.01	256	<.003	68.5	4	<.01	346	<.10	300	.11	<.05	.01	29.8	.02	.01	.002	.16	.80	1.06	33	1	<.01
288	6/17/81	Ocn	8.0	<.005	.02	104	<.003	23.7	5	.02	128	.16	88	1.56	<.05	.06	4.5	<.01	.11	.012	.02	.80	10.5	9	7.1	.03
289	6/18/81	Oj	6.9	<.005	.02	78	<.003	10.6	2	<.01	128	<.10	70	1.12	<.05	.02	10.7	.01	.01	.002	.08	1.14	.64	14	3.9	.60
292	6/19/81	Obe	6.9	<.005	.02	52	<.003	9.9	2	.01	92	<.10	54	.01	<.05	.02	7.4	<.01	.01	.002	.56	.98	.40	7	2	.02
293	6/18/81	Oj	7.8	<.005	.01	92	<.003	16.4	2	<.01	134	<.10	92	.01	<.05	.02	11.7	<.01	.01	.002	.60	1.38	.90	7	2.5	.02
297	6/23/81	Ocn	7.6	<.005	<.01	150	<.003	64.6	8	.02	240	.13	162	.05	<.05	.02	3.6	.03	.08	.002	5.94	1.0	5.6	5	3	1.17
298	6/23/81	Obl	7.9	<.005	.05	128	<.003	37.6	2	<.01	174	<.10	130	.64	<.05	.01	11.1	.05	.01	.002	.32	.52	.60	5	3.2	.03
303	6/17/81	Ock	6.6	<.005	.05	20	<.003	4.6	2	<.01	28	<.10	10	.05	<.05	.01	1.7	.02	.01	.002	.08	.58	1.2	7	1.7	.01
304	6/17/81	MOhm	7.8	<.005	.03	92	<.003	117.5	735	<.01	1560	.11	372	.57	<.05	.37	13.8	.04	.13	.002	.02	2.68	279	13	3.5	.06
Sp-24	6/17/81	Or	6.3	<.005	.02	13	<.003	2.2	1.0	<.01	84	<.10	12	.02	<.05	.02	1.4	<.01	.01	.002	.42	.54	1.10	6	2.2	.02
ELK COUNTY																										
Ek-407	6/30/81	MOhm	7.9	<.005	.05	120	<.001	55.3	60	.01	260	.17	134	.25	<.005	.10	7	.01	.18	.004	.02	.66	27.2	17	0	.01
408	6/30/81	MOhm	7.3	<.005	.05	88	<.001	24.8	7	.01	136	.24	78	.06	<.005	.04	4.2	<.01	.01	.002	.08	1.02	11.5	5	0	.01
411	7/1/81	Pa	7.6	<.005	.06	100	<.001	45.8	2	.02	136	---	95	.03	<.005	.03	3.2	<.01	.01	.004	.10	.46	.30	<5.0	0	.01
427	6/29/81	MOso	5.8	<.005	.04	21	<.001	11.2	21	.02	134	<.1	42	.06	.007	.02	3.6	<.0	.01	.004	3.52	1.4	10	5	0	.03
429	6/29/81	MOso	7.2	<.005	.03	108	<.001	23.2	6	.02	126	.11	76	1.45	.005	.09	4.4	.0	.09	.004	.02	.52	13.6	<5	0	.06
431	6/29/81	Pa	6.7	<.005	.02	56	<.001	21.6	3	.02	70	<.10	96	4.48	.005	.37	2.6	.01	.13	.004	.02	.20	1.2	<5	0	.02
434	6/30/81	Pp	---	<.005	.02	---	<.001	44.3	---	<.01	---	---	---	5.37	<.005	.39	7.6	.03	---	---	---	1.88	1.9	---	---	.22
435	6/30/81	Pa	---	<.005	.03	---	<.001	12.6	---	<.01	---	---	---	1.88	<.005	.64	2.5	.02	---	---	---	.64	.40	---	---	.09
452	6/29/81	Pa	7.5	<.005	.07	104	<.001	56	7	.01	220	<.10	116	.72	.023	.02	2.0	.02	.08	.002	.02	.56	1.7	6	0	.05
453	6/29/81	Pa	3.1	<.005	2.82	0	<.001	65.4	5	.28	864	.21	354	105.26	.008	6.41	38.2	.30	.20	.002	.02	2.38	.80	342	0	.03
457	6/30/81	Pa	5.5	<.005	.09	6	<.001	16	4	.04	180	.20	73	13.62	<.005	1.4	7.8	.02	.12	.002	.02	1.78	.50	73	0	.16
458	6/30/81	Pa	6.5	<.005	.08	52	<.001	13.6	8	.03	122	.18	60	8.72	<.005	.75	6.6	.02	.13	.002	.02	1.64	.30	13	0	.02
459	6/30/81	Pp	6.9	<.005	.06	54	<.001	10.7	2	0	132	.18	<200	.07	<.005	.01	.40	.02	.06	.002	.02	.02	26	6	0	.02
462	6/30/81	Pa	6.4	<.005	.10	36	<.001	9.6	7	.05	66	.19	34	7.05	<.005	.71	2.5	.02	.07	.002	.04	1.26	.70	<5.0	0	.07
464	7/1/81	Pp	6.6	.005	.05	48	<.001	12	5	.03	70	.14	45	4.98	<.005	.60	3.6	.01	.15	.002	.02	1.82	2.1	5	0	.04
465	7/1/81	Pp	6.9	<.005	.07	84	<.001	20.8	5	.03	100	.17	71	2.59	<.005	.24	4.6	0	.23	.002	.02	2.1	4	5	0	.03
Sp-3	7/1/81	Pp	6.2	<.005	.67	28	<.001	13.6	2	.02	88	.11	---	.35	<.005	.18	1.7	0	.10	.004	.88	.56	.60	10	0	.06

LYCOMING COUNTY

Ly-479	4/30/81	Ock	5.9	<.005	.03	13	<.003	8.4	10	<.01	76	.20	50	<.01	<.05	<.01	1.8	<.03	.06	.002	2.64	.56	2.9	10	10	.03
483	6/9/81	Oh	6.9	<.005	.10	124	<.003	56.8	20	<.01	288	<.10	190	.05	<.05	.02	8.9	.01	.06	.002	3.96	1.28	9.1	35	<1.0	.85
484	6/9/81	Oh	6.8	<.005	.16	118	<.003	55.7	14	<.01	288	<.10	168	.08	<.05	.02	4.8	.01	.01	.002	5.72	1.94	8.4	25	1.2	.67
501	6/1/81	Dck	7.2	<.005	.05	90	<.003	23.4	2	<.01	136	<.10	79	.05	<.05	.02	8.8	.01	.08	.002	.02	.70	6.5	10	1.2	.03
502	6/2/81	Obh	6.7	<.005	.03	84	<.003	34.6	2	<.01	214	.32	122	.25	<.05	.12	12.5	<.01	.01	<.002	.18	.66	6.3	59	1.6	.02
503	6/2/81	Dbh	9.0	<.005	.07	206	<.003	8.7	3	.03	316	.22	12	.04	<.05	.02	2.5	.03	.28	.002	.02	.38	99.6	58	1.0	.01
504	6/3/81	Dh	6.4	<.005	.02	50	<.003	40.1	24	.01	170	.62	101	.22	<.05	.13	3.4	.01	.08	.002	.82	.42	6.7	30	<1.0	.03
505	6/3/81	5c	6.9	<.005	.04	124	<.003	59.8	3	.02	176	<.10	134	.03	<.05	.01	3.0	.02	.08	.002	1.2	.50	.90	10	1.0	.02
506	6/3/81	Obe	7.0	<.005	.04	88	<.003	21.9	66	.01	228	<.10	83	.02	<.05	.03	9.3	.01	.08	.002	.04	14.4	41.5	14	1.6	.01
510	8/4/81	Olh	6.7	<.005	.13	42	<.0005	14.4	3	.01	104	<.10	53	.04	<.005	.01	4.2	.01	.04	.002	2.02	.34	5.8	5	23	.03
518	8/4/81	Dck	6.1	<.005	.09	20	<.0005	15.5	22	<.01	138	<.10	53	.30	<.05	.13	4.6	.02	.04	.002	4.84	1.26	8.3	<5.0	7.5	.04
519	8/4/81	Ock	5.9	<.005	.11	7	<.0005	6.1	7	<.01	114	<.10	29	.03	<.05	.02	2.9	.01	.04	.002	5.06	.42	3.5	<5.0	9.5	.06
520	8/5/81	Dck	7.2	.0057	.14	58	<.0005	18	3	<.01	94	<.10	48	.03	.0058	.01	6.9	.01	.06	.016	1.68	.34	8.0	5	6	.01
521	8/5/81	Dck	7.1	<.005	.09	52	<.0005	20.6	5	.01	106	<.10	54	.15	.0045	<.01	2.5	.01	.05	.002	2.64	1.2	7.9	<5.0	7	.01
522	8/5/81	Qal	5.9	<.005	.14	12	.00087	12.5	20	<.01	114	<.10	41	.15	<.005	<.01	2.9	.01	.05	.002	3.08	.12	9.5	10	5	.11
528	8/3/81	Otr	8.4	<.005	.08	84	<.0005	9	4	<.01	108	<.10	31	.12	<.005	.01	2.0	<.01	.35	.002	.02	.24	29	5	12	.01
529	8/3/81	Otr	6.7	<.005	.07	48	<.0005	20.3	5	<.01	132	.14	81	.09	.005	.01	8.9	<.01	.05	.002	3.52	.56	4.9	20	---	.11
532	8/3/81	Dtr	7.1	<.005	.09	94	.00089	22.6	2	.03	112	<.10	75	.04	.0048	.07	5.9	.02	.05	.004	.20	.52	12.9	5	---	.01
537	8/4/81	Dh	7.1	<.005	.07	60	<.0005	24	5	.03	108	<.10	66	.20	<.005	.09	3.2	.03	.13	.002	.02	.22	5.6	10	10	.02
541	8/4/81	Dtr	7.8	<.005	.09	108	<.0005	12	2	.01	140	.15	42	.08	<.005	.05	3.7	.01	.28	.002	.02	.56	32.3	5	5	.03
546	8/17/81	DSkt	7.7	<.005	.04	124	<.0005	56.4	14	<.01	200	.20	161	.34	<.005	.13	8.3	<.01	.01	<.002	<.02	.4	2.8	12	---	.03
553	8/3/81	Dck	6.1	<.005	.06	12	<.0005	7.8	2	.02	20	<.10	18	.05	<.005	.01	2.0	.01	.01	.002	.42	.48	1.0	<5	3	.02
560	8/4/81	Dck	6.5	<.005	.07	46	<.0005	21	15	<.01	90	<.10	67	.04	<.005	.01	3.8	<.01	.01	.002	1.82	1.68	8.5	10	8	.04
561	8/4/81	Dck	7.1	.0054	.06	100	.00107	31.9	2	<.01	106	<.10	88	.08	<.005	.01	4.0	<.01	.04	.004	.36	.86	6.6	5	14	.02
578	8/5/81	Dck	6.5	<.005	.09	38	<.0005	8.1	10	<.01	84	<.10	36	.05	<.005	.01	2.6	.02	.04	.002	.76	.64	12.1	5	13	3.69
579	8/5/81	Ock	6.7	<.005	.08	42	<.0005	11.4	2	<.01	48	<.10	40	.03	<.005	.01	2.3	.01	.04	.002	.08	.48	2.4	<5.0	12	.02
580	8/10/81	Ock	7.4	<.005	.03	96	.00046	31.1	9	.01	126	.21	92	.15	.0214	.04	3.6	.01	.13	.44	1.58	2.42	9.1	9	5	4.05
581	8/4/81	Dck	7.5	<.005	.08	90	<.0005	28.9	2	<.01	114	.12	82	.04	<.005	.01	4.1	.01	.04	.002	.54	.66	4.7	<5.0	18	.01
583	8/4/81	Ock	7.2	<.005	.09	102	<.0005	48.2	29	<.01	254	<.10	149	.04	.005	.01	7.3	.01	.04	.002	3.52	1.32	10.3	10	20	.03
585	8/11/81	Ock	8.3	.0237	.03	112	<.0005	16.3	2	<.01	148	.18	56	.06	.0055	.01	5.3	.01	.03	.172	.31	.88	27.9	14	3	.48
592	8/18/81	Dlh	6.8	<.005	.12	58	<.0005	1.6	1	.01	86	.20	28	.07	.0055	.02	4	<.01	<.01	<.002	.14	.60	19.8	8	---	.03
591	8/18/81	Dlh	9.1	<.005	.11	186	<.0005	.60	2	<.01	200	.40	14	.13	<.005	.01	.30	<.01	.08	<.002	<.02	.24	90.5	6	---	.02
59[illegible]	8/18/81	Olh	7.2	.0051	.09	86	.00076	9.6	2	<.01	134	.22	37	.04	.0055	.02	3.2	<.01	.02	<.002	.12	.98	24	7	---	1.23
600	8/18/81	Dlh	7.3	.0062	.06	84	<.0005	20.8	1	<.01	144	.19	80	.07	.0154	.03	7	.01	.01	<.002	.34	.38	6.1	11	---	.03
608	8/18/81	Obe	5.6	<.005	.03	5	<.0005	3.3	2	<.01	32	.14	17	.11	.0072	.02	.5	<.01	<.01	<.002	.20	.70	.7	5	---	.03
611	8/18/81	Obe	5.5	<.005	.06	4	<.0005	.7	2	.01	4	.11	16	.05	.0323	.02	1.1	.01	.01	.002	.66	.88	1.5	6	---	.04
612	8/18/81	Obe	8.0	.0061	.07	86	<.0005	18.4	1	.02	152	.13	96	.03	.0101	.01	13.3	.01	<.01	<.002	.10	.92	6.4	?2	---	.56
628	8/10/81	Dck	7.8	<.005	.03	100	<.0005	28.6	3	<.01	110	.70	83	.04	.0058	<.01	3.7	.01	.03	.004	.50	.42	10.8	3	4	.01
629	8/10/81	Qal	6.8	<.005	.07	28	<.0005	12.8	4	<.01	86	.38	42	.22	<.005	.03	2.4	<.01	.03	.002	3.96	.42	3.5	6	2.5	.02
632	8/11/81	Dck	6.2	<.005	.01	11	<.0005	3.0	2	.03	28	.29	11	1.06	.0084	.02	.70	.02	.03	.002	.86	.22	1.4	3	2	.11
635	8/12/81	Dck	6.7	<.005	.09	28	<.0005	11	3	<.01	42	.24	27	.04	<.005	.01	1.6	<.01	.03	.002	.54	.22	2.7	7	3	.01
639	8/17/81	Dtr	6.9	<.005	.06	64	<.0005	18.4	2	<.01	130	.18	70	1.62	<.005	.37	5.7	.01	.09	<.002	<.02	.36	7.7	17	---	.30
641	8/18/81	Dlh	7.8	<.005	.09	110	<.0005	25.6	2	<.01	144	.17	105	.10	<.005	.03	10.3	.01	.01	<.002	.18	.60	7.6	10	---	.03
642	8/18/81	Dtr	7.4	<.005	.16	66	<.0005	160	.4	<.01	118	.14	63	.14	<.005	.03	5.1	<.01	.02	.002	.04	.40	7.4	11	---	.02
647	8/18/81	Ock	6.5	<.005	.06	30	<.0005	6.8	6	.02	108	.13	47	.12	.0082	.05	2.9	.05	<.01	<.002	6.38	.42	3.4	<5	---	.04
649	8/19/81	Otr	7.9	<.005	.07	120	<.0005	32	1	.01	188	.14	135	.06	.0067	.07	13.3	.02	.06	<.002	<.02	.22	8.1	24	---	.02
650	8/19/81	Dtr	7.9	<.005	.06	104	<.0005	17.2	1	<.01	158	.12	114	.06	<.005	.05	11.4	.02	.07	<.002	<.02	.22	7.2	19	---	.01
653	8/19/81	Olh	7.4	<.005	.05	82	<.0005	14.4	11	<.01	174	.16	54	.43	.0066	.14	4.4	<.01	.12	<.002	<.02	.44	25.3	17	---	.57
656	8/29/81	Olh	9.0	<.005	.07	168	<.0005	2.2	25	<.01	264	.40	17	.04	.0066	.02	1.3	.01	.12	<.002	<.02	.28	94.6	7	---	.03
667	8/17/81	Ock	6.6	<.005	.04	42	<.0005	18.4	21	.02	160	.13	60	.85	<.005	.10	3.4	.02	.15	.20	3.54	1.98	19.4	21	---	.03
668	8/17/81	Dck	5.8	<.005	.08	6	<.0005	2.4	2	<.01	18	.12	18	.07	.0107	.02	.5	.02	.01	.002	.48	.52	1.1	2	---	.02
673	8/18/81	Ock	6.9	<.005	.03	74	<.0005	27.9	11	<.01	170	.17	101	.22	.0053	.03	5.7	<.01	<.01	<.002	.98	1.46	5.8	9	---	.10

NORTHUMBERLAND COUNTY

Nu-207	8/17/81	Dtr	7.4	<.005	.07	98	<.0005	35.2	1	<.01	214	.17	140	.15	<.005	.03	12.8	<.01	.01	<.002	.10	.5	6.4	52	---	.03
210	9/27/81	DSkt	7.5	<.005	.11	236	<.0005	9.59	3	.01	432	.60	396	.13	<.005	.01	30	<.01	.09	.002	.02	.78	.80	95	3.1	.02
211	9/27/81	Oh	7.3	<.005	.05	266	<.0005	73.4	4	.01	378	.85	350	1.35	<.005	.18	21.3	.01	.34	.002	.02	.46	15.3	40	9.1	.17
212	10/5/81	Otr	7.0	<.005	.04	64	<.0002	12.8	2	<.01	64	.10	58	.09	<.003	.04	5.7	.01	.01	.002	.04	.46	6.8	10	1.5	.03
257	10/5/81	Ooo	7.3	<.005	.06	226	<.0002	75.7	1	<.01	292	<.10	248	5.66	<.0046	.08	13.8	.01	.20	.002	.02	.44	8.6	35	1.7	.02
258	10/5/81	Doo	7.5	<.005	.04	120	<.0002	38.8	6	<.0001	---	.10	145	.06	<.003	.02	12	.01	.01	.034	.13	.42	2.2	20	2.0	.02
274	10/14/81	5wc	7.6	<.005	.06	194	<.0002	68	6	.01	334	.10	254	.04	<.005	.01	20.8	.02	.02	.002	2.42	2.72	20	50	1.2	.02

TABLE 13. (CONTINUED)

Well number	Date of collection	Aquifer[1]	pH	Arsenic (As)	Aluminum (Al)	Alkalinity (CaCO3)	Cadmium (Cd)	Calcium (Ca)	Chloride (Cl)	Chromium (Cr)	Dissolved solids	Fluoride (F)	Hardness (CaCO3)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)	NH_3, as N	NO_2, as N	NO_3, as N	Potassium (K)	Sodium (Na)	Sulfate (SO_4)	Total organic carbon	Zinc (Zn)
POTTER COUNTY																										
Po- 87	6/6/81	Dck	7.3	<.005	.08	72	<.001	24.2	2.0	<.01	132	<.10	88	.07	.005	.02	7.7	<.01	.04	.002	.08	1.26	4.1	22	0	.05
88	6/6/81	Dck	7.0	<.005	.08	94	<.001	6.8	198	<.01	516	<.10	31	.53	<.005	.06	1.8	<.01	.01	.002	.08	.48	188	<5	0	.29
93	6/7/81	Dck	7.6	.03	.08	112	<.001	110.1	809	<.01	1928	<.10	200	1.80	<.005	.47	27.2	.02	.24	.002	.02	4.54	362.9	<5	0	.02
94	6/7/81	Dck	7.0	<.005	.10	76	<.001	22.3	47	.01	218	<.10	90	.62	<.005	.33	7.8	<.01	.01	.004	.40	1.14	24.7	8	0	.07
97	6/7/81	Dck	6.7	<.005	.06	28	<.001	11.2	18	.01	94	<.10	43	.07	<.005	.01	3.1	.01	.01	.002	.80	1.12	11	5	0	.02
101	6/7/81	Dck	7.3	.02	.05	86	<.001	20.5	15	.01	136	<.10	8	.63	<.005	.70	7.6	<.01	.01	.002	.02	1.02	10.1	<5	0	.11
103	7/8/81	Dck	6.3	<.005	.10	22	<.001	9.7	4	.01	144	<.10	40	.09	.009	.02	2.3	.02	.06	.002	1.14	1.2	2.2	5	0	.61
108	7/14/81	Dck	6.3	<.005	.29	20	<.003	7.7	8	<.01	66	<.10	40	.07	.005	.01	3	.01	<.01	<.002	.74	.80	3.4	18	<1.0	.03
112	7/14/81	Dck	6.6	<.005	.07	24	<.003	7.9	2	.03	42	<.10	34	.06	.005	.02	2.5	.01	.03	<.002	.40	.78	1.2	16	<1.0	.02
114	7/14/81	Dck	6.5	<.005	.10	13	<.003	6.1	2	.01	42	<.10	24	.05	.005	.01	2.1	<.01	.02	<.002	1.2	.76	1.0	16	<1.0	.03
130	7/14/81	Dck	7.8	<.005	.07	126	<.003	31.5	1.0	<.01	170	<.10	123	.11	.005	.02	11	<.01	.02	<.002	.08	1.2	6.2	32	0	.02
135	7/14/81	Dlh	7.2	<.005	.08	118	<.003	28.4	4	<.01	144	.12	112	.93	<.05	.02	9.8	<.01	.02	<.002	.32	1.42	9.0	31	0	.02
136	7/14/81	Dck	7.5	<.005	.18	72	<.003	22.5	5	<.01	126	.12	83	.17	<.05	.01	6	.01	<.01	<.002	.14	.88	2.0	24	1.0	.01
141	7/15/81	Dck	6.9	<.005	.15	88	<.003	26.3	3	<.01	128	<.10	103	.09	<.05	.02	9.6	<.01	.01	<.002	.88	1.4	3.5	33	<1.0	.05
148	7/15/81	Dck	6.9	<.005	.11	48	<.003	11.5	2	.01	66	.10	40	.04	<.05	.01	3.7	<.01	.03	<.002	.96	1.18	7.8	26	<1.0	.02
161	7/7/81	Dck	9.1	<.005	.09	152	<.001	1.8	17	.01	254	.11	<20	.08	<.005	<.01	.60	.01	.09	.002	.02	.92	86.3	28	0	.01
162	7/8/81	Dck	6.8	<.007	.07	34	<.001	12.3	2	<.01	98	<.10	46	.05	<.005	.01	4	<.01	.06	.004	1.48	.76	3	12	0	.03
167	7/7/81	Dck	7.4	<.005	.09	102	<.003	27.7	1	.01	112	<.10	83	.11	<.05	.01	4.9	<.01	.02	<.002	.30	1.06	5.0	17	<1.0	.02
168	7/13/81	Dck	7.6	<.005	.13	218	<.003	48.7	9	<.01	364	.14	330	.09	<.05	.01	28.9	<.01	.02	<.002	.04	3.04	27.8	95	<1.0	.04
171	7/15/81	Dck	8.3	<.005	.17	112	<.003	10.4	1	<.01	138	.24	37	.08	<.05	.02	1.7	<.01	.15	<.002	<.02	1.44	31.8	23	0	.02
172	7/15/81	Dck	8.2	<.005	.22	154	<.003	12.4	18	<.01	216	.34	47	.14	<.05	.02	4.4	<.01	.15	<.002	<.02	1.40	67.5	24	0	.02
175	7/15/81	Dck	7.9	<.005	.11	92	<.003	70	651	<.01	1254	.18	234	.22	<.05	.28	14.3	<.01	.18	<.002	<.02	3.4	291	25	<1.0	.02
177	7/8/81	Dlh	8.0	<.005	.11	172	<.001	34.9	4	<.01	236	.11	158	.73	<.005	.10	17.2	.02	.14	.004	.02	2	18.2	25	3.6	.03
180	7/14/81	Dlh	8.3	<.005	.08	158	<.003	9.2	75	<.01	128	.26	39	.16	<.05	.02	3.9	.01	.17	<.002	<.02	1.7	100	15	2.4	.02
186	7/15/81	Dlh	7.7	<.005	.08	190	<.003	40.3	4	<.01	254	.11	192	.06	<.05	.07	21.2	.01	.03	<.002	<.02	1.84	11.6	34	<1.0	.02
230	7/16/81	Dck	6.0	<.005	.24	8	<.003	3.6	1	<.01	64	<.10	20	.10	<.05	.01	1.2	<.01	.02	<.002	.10	.74	.40	12	<1.0	.10
SULLIVAN COUNTY																										
Su- 55	8/31/81	Dck	6.9	.005	.05	74	<.0005	26.4	6	<.01	134	<.10	78	.07	<.005	.08	3	.02	.07	.002	.18	.48	8.5	16	3.4	.12
56	8/31/81	Qal	6.4	<.005	<.01	19	.0011	10.7	7	.02	80	<.10	25	.26	.01	.02	1.4	.02	.06	.002	.56	.56	2.7	10	1.9	.02
63	9/1/81	MDhm	6.7	<.005	.19	30	<.0005	11.2	2	.01	66	<.10	28	.04	<.005	.02	2.4	.02	.06	.002	.60	.60	.60	6	1.5	.02
64	9/1/81	Mb	6.5	<.005	.02	30	<.0005	25.5	60	<.01	166	<.10	86	.04	.0095	.06	5.9	.01	.06	.014	1.93	1.62	19.4	7	2	.04
66	9/1/81	Dck	6.4	<.005	.03	19	<.0005	9	4	.01	62	<.10	25	.12	<.005	.05	1.8	.01	.06	.002	.78	.36	1.3	9	4	.04
82	8/31/81	MDhm	7.0	<.005	.03	46	<.0005	14	5	.01	100	.15	41	.12	.0067	.02	1.5	.01	.06	.006	.51	.50	8.3	3	4.7	.02
87	9/1/81	Dck	6.3	<.005	.06	20	<.0005	13.1	4	.01	100	.15	29	.09	.0046	.03	1.4	.01	.06	.004	1.56	2.3	2.1	16	3.1	.03
101	9/1/81	Dck	7.4	<.005	.28	94	.00046	34.2	5	<.01	154	.25	98	.04	.0047	.01	3.4	.01	.07	.006	1.55	.64	8.3	10	5.3	.07
103	9/1/81	Dck	7.7	<.005	.07	70	<.0005	21.6	32	.01	140	.13	56	.06	<.005	.01	3	.02	.07	.002	.48	.52	23.8	4	4.2	.03
105	9/1/81	Dck	7.8	<.005	.16	106	<.0005	21.1	4	.01	146	.58	55	.05	<.005	.09	2.2	.01	.08	.078	.98	1.06	23.4	4	6.9	.01
126	8/31/81	Dlh	7.9	<.005	.07	112	<.0005	25.4	3	<.01	158	.11	93	.11	<.005	.01	7.7	.02	.07	.006	.25	.72	12.7	6	2.1	.02
129	8/31/81	Dlh	6.3	<.005	.02	19	<.0005	10.5	5	<.01	70	<.10	25	.68	<.005	.04	1.5	.01	.07	.002	1.0	1.04	1.9	10	1.6	.11
TIOGA COUNTY																										
Ti-156	7/20/81	MDhm	7.0	<.005	.05	96	<.0005	51.6	7	.01	230	.19	151	.54	<.005	.64	7.4	<.01	.06	.002	.02	.88	11.2	60	3.2	.06
173	7/20/81	Dck	7.3	<.005	.08	244	<.0005	62.9	27	<.01	296	.16	176	.39	<.005	1.47	18	.02	.27	.002	.02	.82	43	15	1.1	.02

182	7/7/81	Dlh	7.2	<.005	.09	120	<.001	50.9	12	.01	286	.21	168	.09	<.005	.09	8.6	.02	.05	.004	2.42	1.72	7.9	30	3.6	.08
185	7/7/81	Dck	7.7	<.005	.08	210	<.001	58.7	20	.01	352	<.10	252	.06	<.005	.01	26.5	.02	.04	.002	.22	3.1	8.2	40	0	.02
186	7/7/81	Dck	8.1	<.005	.09	208	<.001	21.7	77	.01	378	.19	80	.03	<.005	.04	7.3	.01	.25	.002	.02	2.94	109	5	4.5	.01
188	7/7/81	Dlh	7.8	<.005	.09	254	<.001	58.7	3	<.01	356	<.10	272	.69	<.005	.11	25.9	.01	.07	.002	.02	2.54	20.1	40	4.3	.03
191	7/13/81	Dlh	6.8	<.005	.09	72	<.003	25.4	13	<.01	138	<.10	79	7.91	<.05	.10	4.4	.02	.07	.002	.02	.90	5.9	31	<1.0	2.27
195	7/14/81	Dlh	7.2	<.005	.06	128	<.003	42.6	6	<.01	180	.14	141	.09	<.05	.01	6.2	<.01	.03	.002	1.64	1.72	6.6	30	1.3	.03
199	7/14/81	Ock	7.6	<.005	.10	224	<.003	48.1	4	<.01	208	.13	236	.04	<.05	.02	24.1	.01	.05	.01	.37	2.3	4.6	42	1.7	.02
200	7/15/81	Dlh	7.7	<.005	.10	276	<.003	60.8	3	<.01	350	<.10	318	.07	<.05	.03	32	.01	.06	.002	.12	2.32	9.7	55	1.3	.02
202	7/21/81	Dlh	7.1	<.005	.08	224	<.0005	4.5	132	.02	514	.15	32	.09	.0088	.02	.70	.01	.05	.01	.89	.22	176	20	2.5	.07
203	7/21/81	Dck	7.4	<.005	.07	184	<.0005	45.2	6	.01	238	.22	148	.06	<.005	.09	11.9	<.01	.08	.002	.04	2.66	17.5	5	1.8	.02
204	7/21/81	Dck	7.0	<.005	.05	110	<.0005	36.3	10	.01	172	.13	129	.05	<.005	.02	11.7	<.01	.06	.062	1.48	1.46	6.2	10	3.0	.05
229	7/20/81	Dlh	7.6	<.005	.07	144	.00074	31.6	1	.02	156	.14	127	.12	.0087	.02	12.9	<.01	.04	.004	.08	1.78	8	5	1.0	.06
234	7/20/81	Dlh	7.9	<.005	.08	194	<.0005	30.7	66	.02	328	.26	124	.17	<.005	.03	12.4	<.01	.18	.002	.04	2.52	92	36	2.7	.03
236	7/21/81	Ock	7.7	<.005	.03	200	<.0005	48	7	.01	250	.13	184	.10	<.005	.02	15.8	<.01	.07	.002	.32	3.76	14.3	15	4.1	.02
238	7/21/81	Dck	7.7	<.005	.06	228	<.0005	61.7	2	.01	320	.12	232	.29	<.005	.04	17.9	<.01	.37	.002	.02	4.16	20.2	45	1.8	.02
242	7/21/81	Dck	7.5	<.005	.03	130	<.0005	41.7	4	<.01	166	.15	122	.06	<.005	.03	5.6	<.01	.05	.002	.44	.96	7.1	5	<1.0	.02
245	7/21/81	Dck	6.9	<.005	.04	74	<.0005	28.2	3	.01	114	<.10	84	.07	<.005	.01	2.3	<.01	.05	.002	.72	.98	3.7	5	3.4	.05
246	7/21/81	Olh	7.6	<.005	.09	232	<.0005	31	40	.01	310	.23	118	.67	<.005	.14	12.2	<.01	.16	.002	.02	2.24	77	5	2.5	.02
248	7/21/81	Dlh	7.5	<.005	.07	186	<.0005	50.8	4	.04	250	.18	175	.17	<.005	.17	14.9	.03	.08	.002	.04	2.56	9.2	25	1.4	.02
252	7/21/81	Dlh	8.1	.046	.06	202	<.0005	30.4	25	.02	260	.23	94	.72	.0144	.05	6.9	.02	.16	.002	.02	2.22	66	<5.0	1.9	.03
253	7/21/81	Dlh	8.0	.0348	.04	228	<.0005	38.7	42	<.01	300	.17	112	.68	.0046	.03	8.4	.01	.18	.002	.02	2.6	69	5	2.2	.03
254	7/21/81	Dlh	7.7	<.005	.04	256	<.0005	51.3	5	<.01	306	.11	143	.88	<.005	.36	12.2	<.01	.13	.002	.02	2.1	47	20	---	.07
257	7/21/81	Dck	8.0	.0053	.06	118	<.0005	25.1	240	<.01	638	.26	88	.69	<.005	.09	3.9	.01	.27	.002	.02	3.0	170	15	2.7	.04
258	7/21/81	Dck	8.4	<.005	.03	192	<.0005	9.3	17	.01	258	.39	36	.08	<.005	.02	3.8	.01	.16	.01	.01	3.3	93	25	1.8	.01
259	7/21/81	MDhm	7.2	<.005	.03	102	<.0005	29.2	22	.03	138	.18	80	.65	<.005	.08	3.7	.01	.08	.17	.02	1.38	22	5	<1.0	.06
260	7/22/81	Dlh	7.7	<.005	.05	220	<.0005	52.5	11	<.01	576	.17	158	.05	.052	.20	14.5	<.01	.10	.002	.06	3.2	25.2	15	20	.04
262	7/22/81	Dlh	7.8	<.005	.06	292	<.0005	40.8	76	<.01	318	.19	151	.22	<.005	.02	12	<.01	.65	.002	.02	4.52	137	25	18	.03
264	7/22/81	Dlh	7.0	<.005	.01	90	<.0005	36.3	2	<.01	216	.12	118	.57	<.005	.01	6.8	<.01	.08	.002	.58	1.88	3.6	10	24	.06
265	7/20/81	Mb	6.4	.0061	.04	30	<.0005	22.5	5	.04	106	<.10	70	10.75	<.005	.56	3.9	---	.07	.002	.02	.84	2.3	30	1.1	.16
268	7/27/81	Dck	6.4	<.005	.07	15	<.0005	7.4	2	.02	48	<.10	20	.14	<.005	<.01	1.4	---	.01	.002	.04	.60	.80	5	1.3	.09
275	7/28/81	Dck	6.5	<.005	.15	36	<.0005	16.8	3	.01	80	.11	43	.09	.0062	<.01	2.6	<.01	.01	.002	.96	.76	2.8	5	2.2	.06
284	7/21/81	Dlh	7.6	<.005	.05	256	<.0005	57.2	17	.01	284	.11	188	2.40	<.005	1.16	21.3	---	.20	.002	.02	1.32	41.0	30	---	---
285	7/21/81	Olh	7.7	<.005	.18	238	<.0005	62.7	4	.01	292	.13	170	2.44	<.005	.71	14.0	<.01	.12	.002	.02	2.68	29	20	1.8	.02
287	7/21/81	Dck	7.1	<.005	.16	116	<.0005	33.1	12	<.01	200	.15	129	.11	<.005	.01	9.6	<.01	.05	.002	.10	1.46	12.2	15	3.4	.03
292	7/27/81	Olh	7.9	<.005	.13	146	<.0005	8.1	25	<.01	244	.21	28	.14	<.005	.02	2.1	.01	.07	.002	.02	1.24	78.5	5	1.8	.04
293	7/27/81	Dlh	7.8	<.005	.10	196	<.0005	65	3	.01	264	.33	216	.11	<.005	.03	17.6	.03	.07	.002	.02	.98	5.8	25	1.4	.04
294	7/28/81	Dlh	8.0	<.005	.11	276	.00097	45.1	846	.01	1706	.15	140	.39	.0101	.08	9.6	.02	.61	.002	.01	5.22	763.8	<5.0	1.9	.96
308	7/27/81	Dck	7.6	<.005	.07	156	<.0005	32.5	4	.01	228	.11	131	.03	<.005	.01	5.0	.02	.01	.002	.16	1.14	23.7	5	1.6	.02
309	7/27/81	Dck	7.4	.0059	.08	122	<.0005	44.4	6	<.01	170	.25	96	.05	.0148	.17	6.3	.01	.01	.002	.26	.94	19.6	5	2.7	.11
310	7/28/81	Dck	7.9	<.005	.10	190	<.0005	33.9	7	<.01	242	.16	122	.11	.0048	.11	13.1	.01	.13	.002	.10	1.44	37.7	5	3.9	.02
311	7/27/81	Dlh	7.7	<.005	.09	166	<.0005	47	7	<.01	232	.14	138	.03	<.005	.02	9.6	.01	.08	.002	.10	2.28	22	5	1.4	.02
316	7/28/81	Dck	7.2	.0111	.08	64	<.0005	240	2	<.01	106	.56	70	.11	<.005	.01	2.5	.02	.06	.002	.20	.90	2.4	5	1.6	.13
321	7/29/81	Ock	8.6	.0111	.08	168	<.0005	1.9	29	<.01	254	.40	<20	.11	<.005	.01	.50	.02	.09	.002	.12	.90	121.6	10	1.9	.13
328	7/27/81	Dlh	7.6	<.005	.07	176	<.0005	54.7	3	<.01	250	.36	175	.04	.0083	.02	13.1	.01	.06	.002	.10	2.14	8.1	10	2.0	.05
330	7/27/81	Ock	8.4	<.005	.07	226	<.0005	14.3	9	.01	310	.16	43	.04	<.005	.02	4.3	.01	.14	.002	.14	3.74	98.3	10	1.8	.02
331	7/27/81	Dlh	7.8	<.005	.05	208	<.0005	70.5	143	.01	538	.10	230	.36	<.005	.06	20.8	.01	.21	.002	.02	3.94	100.4	25	1.2	.04
335	7/28/81	Dlh	7.7	<.005	.10	218	<.0005	78	4	.02	286	<.10	254	.06	<.005	.01	14.7	.01	.01	.002	.56	1.84	5.90	20	1.4	.02
336	7/28/81	Dck	8.2	<.005	.09	328	<.0005	39.2	77	<.01	682	.14	146	.08	<.005	.03	17.2	<.01	.16	.024	.12	3.42	233.7	130	1.8	.22
339	7/28/81	Dlh	7.7	<.005	.07	154	<.0005	50.1	3	.02	222	.11	160	.08	<.005	<.01	13.4	<.01	.01	.002	.64	1.42	7.0	10	1.3	.02
340	7/28/81	Dlh	7.7	<.005	.09	164	<.0005	51.7	3	.01	218	.11	165	.07	<.005	<.01	12.7	<.01	.01	.002	.32	1.3	7.4	20	1.2	.03
350	7/28/81	Ock	7.5	<.005	.42	124	<.0005	35.3	2	.01	152	.15	101	.48	<.005	.02	5.7	<.01	.01	.002	.02	.78	11.9	<5.0	1.0	.01
353	7/28/81	Dlh	7.5	<.005	.08	166	<.0005	48.2	8	<.01	246	.70	170	.08	<.005	.03	16.1	<.01	.01	.002	.06	1.62	9.1	15	<1.0	.02
368	8/5/81	Dlh	7.4	<.005	.08	154	.00078	57.7	13	<.01	240	<.10	189	.06	<.005	.18	12.3	<.01	.11	.024	1.22	2.48	7.1	20	18	.18
383	7/28/81	Dlh	7.3	<.005	.09	138	<.0005	61.3	50	.01	376	.22	177	.03	<.005	.02	9.0	.01	.08	.002	.78	2.36	26.6	20	2.0	.02
393	8/4/81	Dck	6.8	<.005	.08	88	.00054	42.2	13	<.01	152	.13	119	.21	.0423	1.03	3.3	.02	.05	.01	.55	.64	4.1	15	23	1.62
396	8/4/81	Ock	7.3	<.005	.10	102	<.0005	42.2	22	.01	144	<.10	61	.03	<.005	.11	2.6	.02	.04	.034	1.27	.74	31.2	5	24	.03
397	8/10/81	MOhm	7.6	<.005	.06	56	<.0005	22.4	3	.04	66	.26	64	.06	<.005	.03	3.1	.02	.02	.002	.68	.64	.60	11	2.0	.02

UNION COUNTY

Un-117	10/14/81	Sbm	7.6	<.005	.08	122	<.0002	45.8	20	.02	224	.12	148	.08	.009	.01	8.3	.02	.02	.002	.48	.62	10.9	15	1.0	.04
128	9/9/81	Sbm	7.9	<.005	---	120	<.0005	44.8	9	.02	200	.25	157	.05	.0078	.04	10.2	.02	<.01	.018	.40	.70	4.6	25	---	.04

TABLE 13. (CONTINUED)

Well number	Date of collection	Aquifer[1]	pH	Arsenic (As)	Aluminum (Al)	Alkalinity (CaCO3)	Cadmium (Cd)	Calcium (Ca)	Chloride (Cl)	Chromium (Cr)	Dissolved solids	Fluoride (F)	Hardness (CaCO3)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)	NH3, as N	NO2, as N	NO3, as N	Potassium (K)	Sodium (Na)	Sulfate (SO4)	Total organic carbon	Zinc (Zn)
Un-132	9/9/81	OSkt	7.9	<.005	.07	194	<.0005	60.8	7	<.01	334	.14	266	.08	<.005	.01	24.8	.01	.01	.002	5.28	.72	1.2	30	---	.04
136	9/10/81	OSkt	7.7	<.005	.06	242	<.0005	84.1	18	<.01	400	.16	312	.06	.0068	.01	27.3	.02	.01	<.002	7.7	3.37	2.9	35	---	.04
137	9/10/81	Swc	7.9	<.005	.10	162	<.0005	51.9	7	<.01	312	.18	248	.09	.0054	.01	22.6	.01	<.01	.002	9.23	.74	1.2	25	---	.03
143	9/14/81	OSkt	7.4	<.005	.06	300	<.0005	95.2	6	<.01	424	---	362	.04	<.005	.01	35.3	.02	.25	.008	3.07	.74	.80	39	---	.03
145	9/14/81	Doo	7.4	<.005	.07	242	<.0005	83	10	<.01	370	---	282	.41	<.005	.05	25.5	.01	.31	.006	.01	.96	2.2	51	---	.02
146	9/15/81	Sbm	7.3	<.005	.10	112	<.0005	36	6	.02	174	---	137	.06	<.005	.01	10.1	.04	.27	.006	3.95	1.16	2.3	4	---	.04
155	9/14/81	Swc	7.7	<.005	.05	124	<.0005	29.4	6	<.01	226	<.10	---	.03	.0055	.01	21.1	.01	.31	.008	.39	.78	.50	27	---	.02
158	9/14/81	Sbm	7.6	<.005	.05	182	<.0005	78	9	.02	314	<.10	---	.03	.0045	.01	9.3	.02	.27	.006	3.73	.84	1.8	20	---	.02
159	9/14/81	Sbm	7.3	<.005	.03	106	<.0005	46.4	8	<.01	200	<.10	147	.05	<.005	.01	7.6	.02	.31	.010	7.13	.62	.60	10	---	.02
163	9/15/81	Sc	8.0	<.005	.04	110	<.0005	16	6	<.01	200	.31	47	.07	<.005	.02	2.8	.01	.77	.028	.01	6.5	34	10	---	.01
164	9/15/81	Sc	6.8	<.005	.05	54	<.0005	11.4	3	<.01	102	.11	60	.05	<.005	.05	7.6	<.01	.27	.008	.45	.50	1.4	---	---	.02
166	9/15/81	Sc	6.5	<.005	.04	38	<.0005	8.8	3	<.01	60	<.10	42	.48	<.005	.02	7.2	.01	.25	.008	.11	.44	.50	5	---	.01
169	10/6/81	Sc	7.1	<.005	.04	110	<.0002	50.6	13	<.01	108	<.10	145	.04	<.003	.02	5.7	.01	.01	.026	.11	.56	.60	15	3.1	---
176	9/28/81	Swc	7.5	<.005	.07	182	<.0005	53.2	8	.02	292	.20	268	.13	<.005	.02	24.5	.01	.05	.002	5.72	1.16	2.4	30	3.2	.02
177	9/26/81	Swc	7.7	<.005	.06	204	<.0005	77.4	7	.01	302	.10	234	.09	<.005	.01	12.6	---	.06	.002	5.06	.62	1.3	20	2.2	.02
178	9/26/81	Sbm	7.1	<.005	.06	100	<.0005	29.8	20	<.01	244	<.10	113	.03	<.005	.02	8.3	.01	.08	.010	4.39	3.44	20.6	25	1.4	.01
180	9/26/81	Sc	6.8	<.005	.05	66	<.0005	17.7	2	.01	98	.10	73	.04	.004	.03	5.7	.01	.05	.002	.02	.54	.50	<5	1.2	.02
185	9/27/81	Sbm	7.5	<.005	.09	128	<.0005	49.1	37	<.01	280	<.10	190	.17	<.005	.01	19.9	.01	.05	.002	4.40	1.02	5.4	25	1.9	.02

[1]Qal, alluvium, Pcc, Casselman Formation; Pcq, Glenshaw Formation. Pa, Allegheny Group, Pp, Pottsville Group; Mmc, Mauch Chunk Formation; Mb, Burgoon Sandstone; MOhm, Huntley Mountain Formation; MOso, Shenango Formation through Oswayo Formation, undivided; Ock, Catskill Formation; Olh, Lock Haven Formation; Obh, Brallier and Harrell Formations, undivided, Otr, Trimmers Rock Formation; Oh, Hamilton Group; Omh, Mahantango Formation; Ooo, Onondaga and Old Port Formations, undivided; OSkm, Keyser Formation through Mifflintown Formation, undivided; OSkt, Keyser and Tonoloway Formations, undivided; Swc, Wills Creek Formation, Sbm, Bloomsburg and Mifflintown Formations, undivided; Sc, Clinton Group; Oj, Juniata Formation; Obe, Bald Eagle Formation; Or, Reedsville Formation; Ocn, Coburn Formation through Nealmont Formation, undivided; Obl, Benner Formation through Loysburg Formation, undivided; Obf, Bellefonte Formation; On, Nittany Formation.

TABLE 14. RECORD OF WELLS

Well location: The number is that assigned to identify the well. It is prefixed by a two-letter abbreviation of the county. The lat-long is the coordinates in degrees and minutes of the southeast corner of a 1-minute quadrangle within which the well is located.

Use: A, air conditioning; B, bottling; C, commercial; E, power; F, fire; H, domestic; I, irrigation; N, industrial; P, public supply; R, recreation; S, stock; T, institution; U, unused; W, recharge; Z, other.

Topographic setting: C, stream channel; F, flat; H, hilltop; L, swamp; S, hillside; T, terrace; V, valley flat; W, draw.

Aquifer: Qal, alluvium; Pcc, Casselman Formation; Pcg, Glenshaw Formation; Pa, Allegheny Group; Pp, Pottsville Group; Mmc, Mauch Chunk Formation; Mb, Burgoon Sandstone; MOhm, Huntley Mountain Formation; MDso, Shenango Formation through Oswayo Formation, undivided; Dck, Catskill Formation; Dlh, Lock Haven Formation; Dbh, Brallier and Harrell Formations, undivided; Dtr, Trimmers Rock Formation; Dh, Hamilton Group; Ooo, Onondaga and Old Port Formations, undivided; OSkc, Keyser Formation through Clinton Group, undivided; OSkm, Keyser Formation through Mifflintown Formation, undivided; DSkt, Keyser and Tonoloway Formations, undivided; Swc, Wills Creek Formation; Sbm, Bloomsburg and Mifflintown Formations, undivided; Sc, Clinton Group; St, Tuscarora Formation; Oj, Juniata Formation; Obe, Bald Eagle Formation; Or, Reedsville Formation; Ocl, Coburn Formation through Loysburg Formation, undivided; Ocn, Coburn Formation through Nealmont Formation, undivided; Obl, Benner Formation through Loysburg Formation, undivided; Oba, Bellefonte and Axemann Formations, undivided; Obf, Bellefonte Formation; Oa, Axemann Formation; On, Nittany Formation; Osl, Stonehenge/ Larke Formation; Cg, Gatesburg Formation; Cw, Warrior Formation.

Lithology: dol, dolomite; ls, limestone; sg, sand and gravel; sh, shale; ss, sandstone; st, siltstone.

Static water level: Depth--F, flows but head is not known. Oate--month/last two digits of year.

Reported yield: (gal/min), gallons per minute.

Specific capacity: (gal/min)/ft, gallons per minute per foot of drawdown.

Hardness: gpg, grains per gallon.

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/lithology
Number	Lat-Long							
								BRADFORD
Br- 48	4157-7631	Dairymen's Cooperative Assoc. Inc.	---	---	N	775	V	Qal/sg
108	4157-7631	Ingersoll-Rand Co.	Layne-New York Co., Inc.	---	F	760	V	Qal/---
125	4155-7648	Lester Maynard	W. H. Vanderhoof Drilling	1977	H	1260	V	Dlh/---
126	4155-7649	John Somers	do.	1977	H	1690	S	Dlh/---
127	4155-7650	R. Brown	do.	1979	H	1770	S	Dlh/---
128	4156-7650	A. Purcell	do.	1980	H	1645	H	Dlh/---
129	4159-7650	C. Thompson	do.	1978	H	1780	S	Dlh/---
130	4159-7651	A. Andrews	do.	1978	S	1758	S	Dlh/---
131	4157-7649	R. Szczech	Josiah F. Harrison	1980	H	1780	H	Dlh/---
132	4159-7642	D. Kress	Donald K. Havens	1980	H	1130	V	Dlh/---
133	4155-7646	S. Sterling	W. H. Vanderhoof Drilling	1979	H	1710	S	Dlh/---
149	4157-7647	C. Wilson	James C. Vanderhoof	1978	H	1260	S	Dlh/---
150	4159-7647	M. Culver	W. H. Vanderhoof Drilling	1980	H	1280	S	Qal/---
161	4156-7648	R. Avery	do.	1977	H	1315	V	Qal/---
162	4156-7649	G. Volk	do.	1979	H	1440	S	Dlh/---
176	4155-7639	G. Archer	do.	1979	H	1640	S	Dlh/ss
177	4155-7639	D. Desmond	do.	1979	H	1580	S	Dlh/ss
178	4155-7640	J. Harney	do.	1979	H	1700	S	Dlh/sh
179	4155-7639	C. Frey	do.	1979	H	1560	S	Dlh/ss
180	4154-7639	D. Rush	do.	1979	H	1700	H	Dlh/ss
181	4154-7638	F. Slife	do.	1978	H	1660	S	Dlh/ss
184	4153-7640	J. Weed	do.	1977	H	1490	V	Dlh/---
186	4154-7641	C. Card	do.	1979	H	1320	S	Dlh/ss
187	4156-7642	R. Squires	do.	1977	H	1080	V	Qal/sg
188	4155-7644	M. May	do.	1978	H	1300	S	Dlh/---
189	4157-7641	B. Skorusa	do.	1978	H	1610	S	Dlh/---
190	4157-7641	D. Salisbury	do.	1978	H	1580	S	Dlh/sh
191	4156-7643	E. Carr	do.	1979	H	1320	S	Dlh/---
192	4159-7642	R. Langeland	do.	1978	H	1580	S	Dlh/sh
193	4156-7638	W. Allen	do.	1978	H	1620	S	Dlh/---
194	4156-7638	J. Allen	do.	1977	H	1700	S	Dlh/sh
195	4156-7640	B. Frisby	do.	1978	H	1480	S	Dlh/ss
196	4158-7637	C. Ford	do.	1977	H	1080	S	Dlh/ss
221	4157-7631	Ingersol-Rand Co.	---	1960	A	760	V	Qal/---
228	4159-7632	D. Proctor	H. W. Vanderhoof Drilling	1978	H	815	V	Dlh/---
229	4158-7632	M. Meyers	do.	1979	H	790	V	Qal/sg
230	4158-7632	D. Loomis	do.	1979	H	785	V	Qal/sg
232	4159-7633	B. McCarty	do.	1978	H	785	V	Qal/sg
233	4158-7635	S. Benjamin	James C. Vanderhoof	1979	H	1000	S	Dlh/sh
234	4157-7633	M. Stevens	W. H. Vanderhoof Drilling	1978	H	1320	S	Dlh/sh
235	4156-7633	A. Zosh	do.	1977	H	1070	S	Qal/---
236	4156-7633	R. Johnson	do.	1976	H	1080	S	Dlh/sh
241	4155-7635	T. Rosh	do.	1980	H	1210	S	Qal/---
242	4155-7636	C. Kellogg	do.	1979	H	1340	S	Qal/---
243	4155-7634	R. King	do.	1979	H	1140	S	Dlh/---
244	4155-7631	H. Keiper	do.	1980	H	790	S	Qal/sg
								CAMBRIA
Ca- 18	4038-7848	Henrietta Water Co.	Hoffman Bros.	---	P	1550	S	---/---
21	4035-7841	Carrolltown Water Co.	do.	---	P	1940	V	Pa/---
30	4039-7847	Barnesboro Bor. Water Co.	D. J. Bougher	1914	P	1440	V	Pa/ss
31	4039-7846	W. E. Hoffman	do.	---	C	1520	V	Pa/---
32	4038-7846	North Cambria Water Co.	Hoffman Bros.	1933	P	1460	V	Pa/---
63	4029-7836	Lee Hoffman	W. A. Horner	---	C	1800	V	Pcg/ss
64	4028-7835	Mary Conway	Albright & Hillard	---	H	2080	S	Pcg/---
69	4030-7838	Carmelite Monastery	---	---	H	2080	S	Pcc/---
70	4030-7836	C. M. Schwab	Hoffman Bros.	---	P	1800	V	Pcc/---
71	4030-7836	do.	do.	---	H	1800	V	Pcc/---
74	4039-7835	John Grozanick	Wilson Electric Pumps	---	H	1560	S	Pcg/---
107	4042-7827	G & H Water Co.	---	---	U	1780	S	Pcg/---
200	4032-7828	Buckhorn Bible Ch.	Harold E. Ritchey	1978	T	2410	H	Pp/ss
201	4037-7839	F. Kirkpatrick	Wilson Electric Pumps	---	H	1980	S	Pcg/---
202	4031-7839	Mary Shoemaker	do.	1979	H	1840	V	Pcg/---
203	4032-7839	Felix Beck	do.	1977	H	1980	H	Pcc/---
204	4032-7838	Paul Gagermeier	do.	1977	H	1950	S	Pcc/---
205	4032-7837	Donald Farabaugh	do.	1977	H	2040	H	Pcc/sh
206	4035-7837	Theodore Hoover	do.	1979	H	1980	H	Pcc/---
207	4035-7842	James Kelly	do.	---	H	2105	S	Pcg/---
208	4034-7841	Michael Dindosh	do.	1978	H	1850	V	Pcg/sh
209	4034-7839	William Hite	do.	1979	H	1850	S	Pcc/---
210	4031-7838	Edward Long	do.	1978	H	1905	V	Pcc/sh
211	4030-7843	Donald Switzler	do.	---	C	2100	F	Pcg/---
212	4031-7843	Paul Anna	do.	---	H	1990	F	Pcg/---
213	4034-7839	James Bender	do.	1979	H	2090	H	Pcc/sh
214	4033-7842	Arthur Deckard	do.	1979	H	2105	S	Pcg/---
215	4034-7843	Harold Finkle	do.	1978	H	1995	V	Pcg/---
216	4035-7840	Chris Jankovich	do.	1978	H	1865	V	Pcg/---
217	4035-7840	William Fowler	do.	1979	H	2005	S	Pcg/sh
218	4032-7839	P. McDermott	do.	1977	H	1895	S	Pcc/---
219	4035-7843	James Morchesky	do.	1977	H	2055	H	Pcg/---
220	4034-7836	John Shingle	do.	1978	H	1940	V	Pcc/---
222	4034-7836	Albert McNulty	do.	1978	H	1955	F	Pcc/---

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level Depth below land surface (feet)	Static water level Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
COUNTY											
40	40	6	---	20	---	60	---	---	---	---	8r- 48
---	---	---	---	---	---	1500	750	---	---	---	108
180	64	6	100;175	15	6/77	6	.04	---	---	---	125
200	39	6	195	---	---	10	---	---	---	---	126
290	101	6	150;270	0	6/79	3	---	---	---	---	127
178	160	6	175	48	5/80	8	---	---	---	---	128
184	22	6	90;178	130	10/78	6	---	---	---	---	129
330	52	6	140;240;290	275	7/78	7	---	---	---	---	130
140	22	6	130	115	9/80	5	1	---	---	---	131
100	91	6	---	24	10/80	15	---	9	595	---	132
98	23	6	30;50;70	0	4/79	7	---	---	---	---	133
84	64	6	84	57	6/78	8	---	---	---	---	149
33	34	6	---	11	6/80	20	---	---	---	---	150
47	47	6	---	F	6/77	30	---	---	---	---	161
71	42	6	46;66	18	12/79	8	---	---	---	---	162
170	21	6	135;160	143	8/79	15	.11	5	260	7.70	176
135	60	6	125	50	9/79	6	---	---	---	---	177
390	20	6	370	---	---	8	---	4	215	7.50	178
230	20	6	80	160	6/79	7	---	---	---	---	179
125	21	6	105	80	8/79	8	---	7	310	7.40	180
320	21	6	50;280	160	9/78	2	---	---	---	---	181
100	27	6	50;95	20	9/77	14	---	5	245	8.00	184
95	21	6	30;85	64	8/79	50	.92	6	290	7.70	186
31	29	6	---	7	9/77	20	---	---	---	---	187
162	162	6	158	121	6/78	10	---	---	---	---	188
150	46	6	100;145	115	10/78	13	---	---	---	---	189
199	21	6	145;190	115	9/78	8	---	7	420	---	190
168	154	6	160	50	5/79	6	---	---	---	---	191
215	41	6	100	170	6/78	2	---	---	---	---	192
85	23	6	80	30	2/78	5	.1	5	295	---	193
179	19	6	155;170	68	8/77	9	---	---	---	---	194
132	34	6	50;95;125	96	4/78	6	---	---	---	---	195
199	94	6	160	6	9/77	2	---	---	---	---	196
59	59	8	---	---	---	800	---	---	300	---	221
70	23	6	45;60	20	11/78	9	---	---	---	---	228
41	42	6	---	29	8/81	15	---	---	---	---	229
31	32	6	---	27	8/81	15	---	19	800	8.60	230
66	67	6	---	18	8/81	30	2	5	230	6.50	232
80	50	6	80	---	---	5	---	---	---	---	233
200	65	6	190	120	8/78	5	---	---	---	---	234
101	101	6	---	15	8/77	25	---	16	680	7.10	235
103	101	6	103	---	---	25	---	---	---	---	236
135	136	6	---	20	1/80	6	---	---	---	---	241
97	98	6	---	20	8/81	11	---	9	350	6.90	242
80	49	6	52;75	42	12/79	5	---	---	---	---	243
50	50	6	---	17	2/80	20	---	---	---	---	244
COUNTY											
158	---	---	---	40	---	50	---	---	---	---	Ca- 18
208	46	10	---	---	---	30	---	---	---	---	21
126	80	8	---	16	---	150	4.8	---	---	---	30
290	190	6	---	25	---	100	---	---	---	---	31
362	200	8	---	46	---	250	---	---	---	---	32
125	40	8	---	15	---	25	---	---	---	---	63
80	21	6	---	20	---	3	---	---	---	---	64
124	18	6	---	50	---	25	---	---	---	---	69
151	33	10	---	8	---	75	---	---	---	---	70
175	30	10	---	8	---	50	---	---	---	---	71
85	40	---	---	10	---	---	---	---	---	---	74
210	---	---	---	---	---	28	---	---	---	---	107
220	21	6	210	---	10/78	30	---	---	---	---	200
---	---	---	---	---	9/79	15	---	1	200	---	201
58	40	6	---	28	8/80	24	---	1	295	---	202
135	21	6	---	50	8/80	7	.15	8	305	---	203
95	21	6	---	53	8/80	12	.39	7	282	6.15	204
120	25	6	---	23	8/80	7	.15	8	282	6.1	205
125	30	6	---	---	6/79	15	---	14	455	6.40	206
---	---	---	---	52	8/80	4	---	---	---	---	207
105	40	6	---	62	8/80	11	---	6	225	---	208
135	20	6	---	30	8/80	15	---	9	340	6.30	209
75	31	6	---	33	9/80	12	---	10	380	6.25	210
---	---	---	---	68	9/80	12	---	8	245	---	211
---	---	---	---	51	9/80	1	---	8	300	---	212
180	33	6	---	---	5/79	10	---	5	217	6.55	213
150	44	6	---	125	9/80	5	---	5	172	6.50	214
150	44	6	---	---	5/78	---	---	---	---	---	215
120	34	6	---	---	11/78	20	---	---	---	---	216
210	30	6	---	---	5/79	4	---	---	---	---	217
150	21	6	---	95	7/77	6	.12	---	---	---	218
165	30	6	---	---	9/77	12	---	---	---	---	219
120	28	6	---	41	9/80	10	---	11	385	5.7	220
240	---	---	---	---	12/78	8	---	---	---	---	222

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/lithology
Ca-223	4034-7836	Joseph Little	Wilson Electric Pumps	1979	H	2002	F	Pcc/---
224	4036-7836	Thomas Noll	do.	1978	H	1840	H	Pcc/---
225	4035-7836	David Hoover	do.	1979	H	1902	H	Pcc/---
226	4036-7834	Tom Krise	do.	1977	H	1690	H	Pcc/---
227	4036-7834	Gerald Umholtz	do.	1979	H	1585	S	Pcg/---
228	4036-7832	Robert Duclos	do.	1978	H	1735	S	Pcg/sh
229	4034-7833	John Mock	do.	1977	H	1710	S	Pcg/sh
230	4033-7832	George Hollen	do.	1978	H	1700	V	Pa/---
231	4033-7832	Thomas Fogle	John K. Greegor	1979	H	1900	S	Pcg/---
232	4030-7834	William Kraczenski	Wilson Electric Pumps	1978	H	1780	V	Pcg/---
233	4030-7836	Ralph Sheehan	do.	1979	H	1855	S	Pcc/---
234	4031-7836	Sheehan	do.	1978	H	1975	H	Pcc/---
235	4031-7835	Bruce Bradley	do.	1976	H	1930	H	Pcc/---
236	4033-7833	Charles Basal	do.	1979	H	1520	V	Pa/---
237	4037-7833	Blaine Link	do.	1979	H	1495	S	Pcg/---
238	4038-7834	Leo Johnson	do.	1978	H	1610	S	Pcg/sh
239	4038-7834	Altoona-Johnstown Diocese	do.	1976	H	1560	H	Pcg/---
240	4038-7832	Richard Thomas	do.	1979	H	1540	H	Pcg/sh
241	4040-7830	John Noel	do.	1978	H	1600	S	Pcg/---
242	4039-7834	Dan Long	do.	1976	H	1505	S	Pcg/---
243	4042-7836	Stephen Bosar	do.	1977	H	1900	H	Pcg/---
244	4042-7832	Beaver Valley Ch.	do.	1979	T	1435	V	Pa/---
245	4230-7828	George Oplaskey	Forsyth Drilling Co.	1972	H	1715	S	Pcg/---
246	4042-7831	Herb Oshall	Wilson Electric Pumps	1976	H	1710	V	Pcg/---
247	4038-7830	Lloyd Gates	do.	---	H	1715	H	Pcg/---
248	4040-7840	Felix Dunlap	do.	1975	H	1890	S	Pa/---
252	4042-7843	D. Homady	Walter T. Smouse, Jr.	1979	H	1890	S	Pcg/---
253	4042-7844	Thomas Kline	Wilson Electric Pumps	1978	H	1830	H	Pcg/---
254	4037-7837	James Bender	do.	1978	H	1880	S	Pcg/---
255	4039-7842	Kevin Galinis	do.	1975	H	1870	S	Pcg/---
256	4039-7842	Joseph Sral	do.	1975	---	1840	S	Pa/---
257	4039-7844	T. Waksmunski	do.	1979	H	1710	S	Pcg/---
258	4039-7844	Francis Stanek	do.	1976	H	1610	V	Pa/---
259	4041-7844	Robert Dolges	do.	1977	H	1885	H	Pcg/---
260	4041-7844	George Bonneau	do.	1978	H	1885	H	Pcg/---
261	4041-7844	Donald Dolges	do.	1978	H	1880	H	Pcg/---
262	4041-7837	Rupert Brawley	do.	1968	H	2165	H	Pcg/---
263	4041-7837	E. A. Vastyan	do.	1969	H	2150	H	Pcg/---
264	4041-7838	Robert Liden	do.	1966	H	2200	H	Pcg/---
265	4040-7838	Dick Kutruff	do.	1968	H	2200	H	Pcg/---
266	4042-7832	Glendale Sch. Dist.	Layne-New York Co., Inc.	1978	T	1510	S	Pcg/ss
267	4035-7842	Carrolltown Bor.	---	1979	P	2015	W	Pcg/---
268	4035-7841	do.	---	1954	P	1955	W	Pcg/---
269	4035-7841	do.	---	1954	P	1960	W	Pcg/---
270	4035-7842	do.	---	---	P	2020	W	Pcg/---
								CAMERON
Cm- 12	4130-7813	Emporium Sanitary Dairy	Olson	1929	N	1030	V	Dck/---
13	4127-7803	U. S. Geol. Survey	Germania Well Drilling Co.	1967	U	1010	V	Dck/ss
14	4127-7803	Pa. Dept. of Environmental Resources	John T. Uhl	1957	P	1005	V	Dck/ss
15	4124-7801	Gene Swank	---	1955	H	900	T	Dck/ss
16	4128-7803	Hemlock Lodge	---	---	H	1150	S	Dck/---
17	4127-7803	Ellinger	---	1956	H	1145	H	Dck/---
18	4125-7801	Sinnemahoning St. Pk.	John T. Uhl	1957	U	930	V	Dck/---
19	4125-7801	do.	do.	1957	P	950	S	Dck/---
20	4124-7801	Pa. Dept. of Environmental Resources	---	---	U	920	T	Qal/---
21	4125-7801	Tony Yaras	Germania Well Drilling Co.	1954	H	960	S	Dck/---
23	4124-7801	Unknown	---	---	U	---	T	Dck/---
24	4124-7801	L. Miller	---	---	H	920	T	Dck/---
25	4124-7801	Sinnemahoning St. Pk.	---	---	H	930	T	Dck/---
27	4135-7810	Sizerville St. Pk.	Moody Drilling Co., Inc.	1959	R	1260	V	Dck/---
28	4127-7803	Sinnemahoning St. Pk.	Harrisburg's Kohl Bros.	1979	P	1018	S	Dck/---
29	4119-7805	B. Batchelder	---	1978	H	790	V	Dck/---
30	4118-7804	Francis Harringer	Germania Well Drilling Co.	1974	H	785	V	Dck/---
31	4119-7804	H. Fox	do.	1979	H	782	V	Dck/---
32	4122-7803	Clifford Bosh	Martin W. Shatzer	1977	H	852	V	Dck/---
33	4122-7803	A. T. Johnson	Karl's Complete Water System Co.	1975	H	870	V	Dck/---
34	4123-7801	R. Phillips	Germania Well Drilling Co.	1980	H	930	S	Dck/---
35	4126-7803	J. J. Thomas	do.	1975	H	1230	S	Dck/ss
36	4126-7803	Foster Eichelberger	do.	1973	H	1180	S	Dck/sh
37	4126-7803	Warton Cameron	John P. Timmerman	1980	H	1140	S	Dck/---
38	4128-7803	Donald Crawford	Germania Well Drilling Co.	1976	H	1120	S	Dck/---
39	4126-7803	Craig	John P. Timmerman	1980	H	1125	S	Dck/---
40	4134-7812	J. Solvesome	C. & I. Enterprises	1978	H	1100	V	Dlh/---
51	4125-7812	S. Pierce	do.	1980	H	920	F	Dck/---
52	4124-7812	B. Biyant	do.	1980	H	940	F	Dck/sh
53	4120-7809	L. Jorden	New Way Drilling Inc.	1978	H	1150	S	Dck/sh
54	4120-7809	J. Towers	Germania Well Drilling Co.	1979	H	1260	S	Dck/---

(CONTINUED)

Total depth below land surface (feet)	Casing: Depth (feet)	Casing: Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
150	25	6	---	38	9/80	6	---	---	---	---	Ca-223
140	24	6	---	59	9/80	5	---	8	340	6.2	224
180	20	6	---	---	10/79	7	---	---	---	---	225
210	20	6	---	150	3/77	4	.08	---	---	---	226
90	24	6	---	58	9/80	12	---	---	---	---	227
120	31	6	---	---	9/78	15	---	---	---	---	228
105	32	6	---	53	9/80	25	---	6	275	6.1	229
102	20	6	---	---	9/78	10	---	---	---	---	230
140	25	6	---	88	9/80	7	---	4	180	---	231
60	31	6	---	---	5/78	25	---	9	318	---	232
120	20	6	---	38	9/80	12	---	9	375	6.4	233
195	20	6	---	97	9/80	12	---	7	305	---	234
105	25	6	---	70	9/80	12	---	10	395	---	235
60	48	6	---	11	9/80	9	---	11	400	---	236
75	21	6	---	26	9/80	12	---	9	365	6.3	237
165	20	6	---	---	9/78	8	---	---	---	---	238
120	37	6	---	69	9/80	15	---	10	450	---	239
120	48	6	---	---	8/79	15	---	---	---	---	240
165	21	6	---	81	9/80	6	---	8	360	6.0	241
75	28	6	---	45	9/80	10	---	10	340	---	242
150	91	6	---	61	9/80	5	---	---	---	---	243
105	20	6	---	---	10/79	12	---	---	---	---	244
230	---	6	---	---	9/72	4	---	9	285	---	245
60	40	6	---	14	9/80	15	.38	1	615	---	246
90	17	6	---	80	---	20	---	---	---	---	247
70	20	6	---	---	12/75	---	---	---	---	---	248
82	20	6	71	---	8/79	5	---	---	---	---	252
105	20	6	---	59	9/80	4	---	6	245	---	253
150	29	6	---	---	5/78	20	---	---	---	---	254
135	31	6	---	54	9/80	5	---	---	---	---	255
165	21	6	---	146	5/75	15	---	---	---	---	256
285	---	6	---	103	9/80	5	---	---	---	---	257
135	39	6	---	100	9/76	10	.35	---	---	---	258
90	23	6	---	49	9/80	12	---	---	---	---	259
105	21	6	---	97	7/78	12	1.33	---	---	---	260
90	21	6	---	35	9/80	12	---	6	230	---	261
90	20	6	32;50	---	7/68	12	---	---	---	---	262
80	---	---	---	---	6/69	20	---	---	---	---	263
145	21	6	70;133	110	10/76	10	.50	6	185	---	264
265	20	6	55;256	---	11/68	2	---	---	---	---	265
303	20	8	46;95;295	77	3/78	20	2.1	---	---	---	266
90	63	6	---	25	5/79	53	3.1	---	---	---	267
130	---	---	---	---	---	10	---	---	---	---	268
130	---	---	---	---	---	5	---	---	---	---	269
90	---	---	---	---	---	42	---	---	---	---	270
COUNTY											
67	56	6	---	25	---	10	---	---	---	---	Cm- 12
102	57	6	35;60	23	6/67	10	.24	2	150	---	13
60	52	6	---	26	4/68	20	---	---	240	---	14
44	---	---	---	---	---	---	---	---	150	---	15
60	---	---	---	38	4/68	---	---	---	115	---	16
272	---	---	---	---	---	---	---	---	420	---	17
70	17	8	---	2	4/68	40	---	---	170	---	18
123	40	8	---	---	---	40	---	---	150	---	19
33	---	---	---	27	4/68	---	---	---	285	6.8	20
167	23	6	---	132	9/67	15	---	---	290	7.3	21
148	---	6	---	---	4/68	---	---	---	190	---	23
120	---	---	---	---	---	---	---	---	---	---	24
133	---	---	---	47	10/67	---	---	---	700	---	25
150	58	8	---	14	7/59	55	3.2	---	---	8.2	27
220	41	6	158;205	---	---	12	---	---	---	---	28
77	34	6	62;74	40	4/78	25	---	8	320	6.8	29
37	37	6	---	---	---	15	---	---	---	---	30
49	52	6	---	---	---	10	---	---	---	---	31
50	34	6	---	---	---	15	---	---	---	---	32
84	40	6	80	44	6/81	---	---	4	195	6.9	33
116	67	6	---	56	7/80	21	.42	---	---	---	34
270	31	6	---	166	6/81	1	---	2	80	7.0	35
131	33	6	---	---	---	2	---	---	---	---	36
220	59	6	---	100	9/80	---	---	2	70	7.5	37
70	40	6	---	---	---	1	---	---	---	---	38
202	31	6	202	159	6/81	8	.25	---	---	---	39
65	25	6	35;53	20	2/78	16	.20	---	---	---	40
85	30	6	60;80	25	5/80	11	.2	---	---	---	51
95	25	6	40;85	30	5/80	7	.11	---	---	---	52
120	21	---	62;100	60	8/78	5	.08	---	---	---	53
50	38	6	---	34	4/79	56	2.8	---	---	---	54

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
								CENTRE
Ce- 4	4057-7753	Ganderstep Camp	Harrisburg's Kohl Bros.	1935	H	1600	S	Dck/sh
6	4053-7813	Philipsburg Brewing Co.	---	---	N	1420	V	Pp/sh
8	4051-7814	Penn Central R. R.	---	---	U	1460	V	Pp/ss
9	4048-7813	General Refractories Co.	---	---	N	1920	S	Mb/ss
11	4059-7742	Howard Nursery	Wieand Brothers	1976	U	700	H	Oh/sh
25	4045-7749	State College Bor.	Harrisburg's Kohl Bros.	1931	U	1300	S	Obf/dol
27	4045-7749	do.	do.	1922	U	1370	V	Or/sh
28	4045-7749	do.	do.	---	U	1380	V	Obe/ss
29	4045-7749	do.	do.	1920	U	1400	V	Obe/ss
42	4049-7752	Penn State Univ.	---	1933	U	1039	V	Cg/dol
43	4049-7752	do.	---	1934	U	1045	V	Cg/dol
44	4049-7752	do.	---	1934	U	1048	V	Cg/dol
46	4047-7751	do.	---	1937	U	1140	S	On/dol
47	4047-7752	State College Bor.	F. L. Bollinger & Sons	1921	P	1221	H	On/dol
49	4049-7740	Centre Hall Bor.	Harrisburg's Kohl Bros.	1973	U	1280	V	Obf/---
78	4051-7743	Pleasant Gap Water Supply Co.	L. E. Gladfelter	1930	P	1240	V	Or/sh
81	4052-7746	Rockview St. Corr. Inst.	---	---	S	1050	S	Osl/ls
91	4101-7739	Sheffield Farms	---	---	U	660	V	DSkm/---
95	4048-7752	Penn State Univ.	---	1962	U	1092	V	Cg/dol
96	4048-7751	do.	Sprague & Henwood, Inc.	1962	U	1130	H	On/dol
97	4051-7750	do.	Harrisburg's Kohl Bros.	1962	P	1240	H	Cg/dol
98	4050-7752	do.	---	1962	P	1208	H	Cg/dol
99	4049-7752	do.	Layne-New York Co., Inc.	1963	P	1038	V	Cg/dol
100	4049-7752	do.	Harrisburg's Kohl Bros.	1965	U	1045	V	Cg/dol
102	4048-7752	do.	Hoffman Bros. Drilling Co.	1938	P	1065	V	Cg/dol
103	4047-7752	do.	Pennsylvania Drilling Co.	1972	U	1190	V	On/dol
104	4047-7752	do.	do.	1972	U	1190	V	On/dol
105	4049-7752	do.	Hoffman Bros. Drilling Co.	1938	U	1090	V	Cg/dol
106	4047-7751	do.	Harrisburg's Kohl Bros.	1938	P	1161	S	On/dol
107	4047-7751	do.	do.	1938	U	1161	S	On/dol
108	4047-7751	do.	do.	1938	U	1180	S	On/dol
109	4047-7751	do.	do.	1939	U	1190	S	On/dol
110	4047-7751	do.	do.	1938	U	1175	S	On/dol
111	4046-7746	do.	---	1940	U	1480	S	Or/sh
112	4047-7751	do.	Harrisburg's Kohl Bros.	1948	P	1149	S	On/dol
113	4047-7751	do.	do.	1948	U	1150	S	On/dol
114	4049-7751	do.	do.	1948	P	1042	V	Cg/dol
115	4049-7752	do.	do.	1948	U	1050	V	Cg/dol
116	4049-7752	do.	do.	1948	U	1092	V	Cg/dol
117	4049-7752	do.	do.	1949	P	1076	V	Cg/dol
120	4047-7752	do.	Pennsylvania Drilling Co.	1972	U	1190	V	On/dol
121	4100-7739	U. S. Army	U. S. Army	1973	U	630	V	DSkm/---
122	4103-7736	do.	Norman Hagenbuch	1973	U	620	V	Dh/sh
129	4049-7740	Centre Hall Bor.	Harrisburg's Kohl Bros.	1973	U	1275	V	Obf/---
133	4049-7757	Centre Assoc., Inc.	Lester E. Gladfelter, Jr.	1958	P	1320	H	Obf/dol
134	4049-7757	do.	Paul Klinger	1963	P	1320	H	Obf/dol
135	4047-7802	Port Matilda Bor.	---	---	U	1215	S	DSkc/sh
136	4047-7802	do.	Harrisburg's Kohl Bros.	1938	P	1230	S	DSkc/sh
137	4047-7802	do.	---	1957	P	1230	S	DSkc/sh
143	4047-7752	State College Bor.	F. L. Bollinger & Sons	1938	U	1220	H	On/dol
144	4045-7749	do.	Harrisburg's Kohl Bros.	1940	U	1230	S	Obf/dol
145	4046-7750	do.	do.	1948	P	1075	V	On/dol
146	4046-7750	do.	do.	1950	P	1075	V	On/dol
147	4045-7750	do.	do.	1954	U	1130	V	Obf/dol
148	4045-7750	do.	do.	1955	U	1180	V	Obf/dol
149	4046-7750	do.	Kohl Bros., Inc.	1960	P	1080	V	On/dol
150	4049-7755	do.	F. L. Bollinger & Sons	1974	U	1200	V	Cg/dol
151	4049-7755	do.	do.	1974	U	1190	V	Cg/dol
152	4046-7750	do.	Harrisburg's Kohl Bros.	1964	P	1075	V	On/dol
158	4049-7755	do.	F. L. Bollinger & Sons	1974	U	1200	V	Cg/dol
159	4045-7749	do.	Harrisburg's Kohl Bros.	1947	U	1120	V	Obf/dol
160	4045-7749	do.	do.	1947	U	1120	V	Obf/dol
161	4045-7749	do.	do.	1947	U	1120	V	Obf/dol
162	4048-7749	Lemont Water Co.	R. S. Carlin Inc.	1966	P	995	V	Ocl/ls
163	4046-7749	State College Bor.	Moody Drilling Co., Inc.	1969	P	1068	V	On/dol
164	4046-7750	do.	do.	1969	U	1062	V	On/dol
165	4046-7750	do.	do.	1969	U	1064	V	On/dol
166	4057-7745	Boggs Twp.	do.	1971	U	708	V	DSkm/ls
167	4057-7744	do.	do.	1971	U	800	V	DSkm/ls
168	4058-7744	do.	do.	1971	U	718	V	DSkm/ls
169	4057-7744	do.	do.	1971	U	735	V	DSkm/ls
170	4057-7746	do.	do.	1971	P	685	V	DSkm/ls
171	4057-7746	do.	do.	1971	P	685	V	DSkm/ls
172	4056-7742	Herbert R. Imbt, Inc.	do.	1972	N	880	V	Cg/dol
173	4047-7802	Port Matilda Water Co.	Oscar Oearmit	1966	U	1340	S	DSkc/ls
174	4046-7745	Harris Twp. Authority	H. W. Klinger	1966	P	1340	S	Or/sh
175	4055-7800	Penn State Univ.	Harrisburg's Kohl Bros.	1971	H	1248	H	Mb/ss
176	4045-7751	do.	Max E. Hickernell	1970	H	1115	V	Oa/ls

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
COUNTY											
641	---	---	---	---	---	2	---	---	---	---	Ce- 4
425	180	8	---	15	---	75	1.5	---	---	---	6
180	100	6	---	+5	---	160	13	---	---	---	8
701	---	8	---	100	---	17	---	---	---	---	9
298	---	6	---	---	---	1	.01	---	---	---	11
301	246	6	---	30	---	500	10	6	---	7.8	25
616	23	8	---	12	---	45	.45	---	---	---	27
200	50	8	---	10	---	20	.12	---	---	---	28
342	48	8	---	2	---	55	.55	---	---	---	29
270	---	12	---	55	11/33	485	21	---	---	---	42
334	5	12	---	45	6/34	260	3.1	8	---	---	43
305	48	12	---	43	6/34	375	6.6	6	---	7.6	44
365	---	---	---	80	---	500	---	13	---	7.6	46
609	49	12	---	213	---	185	12	---	---	8.0	47
450	35	8	292;297;330;390	113	10/73	430	9.2	13	---	7.7	49
215	50	6	---	90	1/61	50	.5	2	---	8.2	78
227	7	6	---	100	---	1	---	---	---	---	81
625	---	8	---	---	---	80	---	---	---	---	91
400	32	12	---	94	---	60	.46	---	---	---	95
375	26	7	---	156	---	15	.18	---	---	---	96
340	98	6	---	305	---	70	5.8	7	---	8.0	97
267	105	6	---	---	---	27	6.9	---	---	---	98
310	64	12	---	45	1/63	500	15	6	---	8.3	99
180	76	4	---	71	---	---	---	---	---	---	100
330	39	12	---	30	8/56	485	21	6	---	---	102
400	32	8	35;83;120;250	95	1/72	130	.52	16	497	7.7	103
473	23	8	48;53;405	45	1/72	150	.59	17	572	7.6	104
450	73	12	---	94	---	315	---	---	---	---	105
340	---	10	---	161	---	458	13	12	---	---	106
405	40	12	---	158	---	490	26	12	---	---	107
565	---	---	---	---	---	---	---	---	---	---	108
405	92	10	---	83	1939	180	---	---	---	---	109
400	---	12	---	---	---	---	---	---	---	---	110
100	42	---	---	---	---	---	---	---	---	---	111
353	26	12	---	142	---	460	---	---	---	---	112
357	26	12	---	---	---	700	---	---	---	---	113
220	53	12	165;212	100	10/48	400	11	9	---	7.8	114
102	---	---	---	---	---	---	---	---	---	---	115
230	43	10	---	92	12/48	450	9.0	6	---	---	116
336	34	12	---	50	1/49	450	29	7	---	---	117
203	108	8	---	---	---	---	---	---	---	---	120
20	---	6	---	7	7/73	---	---	---	---	---	121
26	---	6	---	1	7/73	---	---	---	---	---	122
530	61	8	95;150;195;245	115	10/73	400	---	---	---	---	129
219	37	6	105;205	105	---	19	---	15	---	7.3	133
420	70	6	226;420	---	---	18	---	16	---	7.4	134
65	28	6	---	11	---	20	2.0	26	---	7.4	135
213	52	6	---	---	---	---	---	23	---	7.5	136
160	35	6	---	---	---	60	---	11	---	6.6	137
603	10	16	---	195	12/38	575	19	11	---	7.6	143
264	174	6	---	25	6/40	350	18	---	---	---	144
165	72	12	130	9	---	1000	143	11	---	8.0	145
165	72	12	---	11	11/50	1200	600	13	---	7.6	146
400	21	8	---	28	---	400	---	---	---	---	147
500	15	8	---	10	---	50	---	---	---	---	148
155	83	14	---	13	---	1650	236	12	383	7.6	149
440	59	6	---	---	---	---	---	---	---	---	150
440	350	12	---	---	---	---	---	---	---	---	151
142	82	12	---	30	11/64	1420	109	12	---	7.4	152
502	352	12	---	---	---	15	---	---	---	---	158
513	18	8	---	---	---	60	5	---	---	---	159
85	0	12	---	---	---	0	---	---	---	---	160
330	0	6	---	---	---	2	---	---	---	---	161
304	99	8	---	10	---	---	---	---	---	---	162
228	---	16	---	14	9/70	1500	69	12	372	7.7	163
280	---	16	---	8	9/70	1500	104	11	378	7.9	164
260	---	16	---	6	1/69	2200	525	11	382	7.9	165
386	101	8	---	46	---	202	3.7	---	---	---	166
310	---	---	---	---	---	20	---	---	---	---	167
386	---	---	---	---	---	10	---	---	---	---	168
300	---	---	---	---	---	5	---	---	---	---	169
385	73	8	---	20	6/71	550	100	17	---	7.5	170
385	76	8	---	20	6/71	500	13	14	---	7.6	171
304	164	8	---	25	7/72	980	9.4	---	---	---	172
249	71	8	85;175	---	---	60	---	7	---	6.9	173
189	31	6	28;142;165	28	11/66	30	30	---	---	---	174
250	26	8	110;230	215	2/71	5	.14	---	---	---	175
88	20	8	56;72;84	52	5/70	20	.93	---	---	---	176

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Ce-177	4054-7751	Unionville Bor.	Russell R. Brooks	1967	P	1065	S	Oskm/ls
178	4103-7736	U. S. Army	Kohl Bros., Inc.	1969	Z	630	V	Ooo/sh
186	4051-7809	Pa. Dept. of Transp.	Harrisburg's Kohl Bros.	1973	T	2105	H	Mb/ss
188	4053-7750	Continental Courts, Inc.	Oscar Dearmit	1972	P	900	V	Obf/dol
190	4047-7752	Penn State Univ.	Moody Drilling Co., Inc.	1969	U	1150	V	On/dol
191	4047-7813	Sandy Ridge Water Users Assoc.	---	1954	P	2024	V	Mb/ss
192	4054-7803	Black Moshannon St. Pk.	Ollie L. Whaling	1955	H	1868	V	Mb/ss
193	4054-7804	do.	do.	1954	H	1982	S	Mb/ss
194	4054-7803	do.	do.	1958	U	2020	S	Mb/ss
195	4055-7802	do.	Harrisburg's Kohl Bros.	1963	H	2222	H	Mb/ss
200	4051-7746	Corning Glass Co.	Russell R. Brooks	1966	U	1005	V	Obf/dol
201	4051-7746	do.	do.	1967	U	980	V	Obf/dol
202	4049-7748	Nease Chemical Co.	do.	1967	---	1154	S	Obf/dol
203	4049-7748	do.	do.	1967	---	1125	S	Obf/dol
204	4053-7805	Mid-State Airport	Oscar Dearmit	1974	C	1905	H	Mb/ss
207	4051-7743	Pleasant Gap Water Supply Co.	Russell R. Brooks	1965	P	1450	V	Obe/ss
209	4100-7738	Howard Bor.	---	1966	---	800	V	St/---
214	4043-7753	Ferguson Twp. Water Authority	---	1967	P	1460	V	Obe/---
215	4043-7753	do.	Brooks & Kline	1967	P	1460	V	Obe/---
216	4043-7753	do.	do.	1967	P	1480	V	Obe/---
218	4048-7757	J. Alvin Hawbaker, Inc.	Harrisburg's Kohl Bros.	1961	U	1278	V	Cw/ls
219	4047-7752	Penn State Univ.	Layne-New York Co., Inc.	1974	U	1150	V	On/dol
221	4049-7740	Centre Hall Bor.	Harrisburg's Kohl Bros.	1972	U	1300	V	Obf/---
222	4049-7740	do.	do.	1972	U	1280	V	Obf/---
223	4046-7749	State College Bor.	Moody Drilling Co., Inc.	1968	U	1070	V	On/dol
224	4048-7748	Lemont Water Co.	L. E. Gladfelter	1936	U	1300	S	Or/sh
225	4048-7748	do.	do.	1936	U	1280	S	Or/sh
226	4048-7748	do.	---	1936	U	1300	S	Or/sh
227	4051-7749	Pa. Fish Comm.	Ehmke Well Drillers	1975	Z	1005	V	Cg/dol
228	4051-7749	do.	do.	1975	Z	1010	V	Cg/dol
229	4053-7747	do.	do.	1975	Z	840	V	Cg/dol
230	4050-7746	Rockview St. Corr. Inst.	Moody Drilling Co., Inc.	1966	U	1150	S	Obf/dol
231	4047-7751	Penn State Univ.	Harrisburg's Kohl Bros.	1978	P	1180	S	On/dol
233	4102-7738	U. S. Army	do.	1967	P	720	S	Oskm/ls
234	4102-7738	do.	---	1967	P	720	S	Oskm/ls
255	4057-7809	Thomas Scolzo	Leroy H. Hoffer	1974	H	1405	V	Pa/---
256	4053-7747	W. Roan	Oscar Dearmit	1978	H	1025	H	Osl/ls
257	4053-7844	D. Jaworski	do.	1978	H	1100	H	On/ls
258	4052-7749	Howard Stealey	Gilbert R. Zechman	1977	H	1050	S	On/ls
259	4053-7749	Dunlap	do.	1977	H	1040	S	On/ls
260	4052-7750	R. Struble	Oscar Dearmit	1979	H	1020	S	On/ls
261	4055-7745	R. Genua	do.	1979	H	980	S	Obf/ls
262	4057-7751	H. Brooks	do.	1979	H	1140	S	Ock/sh
263	4056-7747	J. Repasky	do.	1979	H	730	S	Obh/sh
264	4057-7750	A. Rycerz	do.	1978	H	1105	S	Ock/sh
265	4059-7749	I. Watson	do.	1978	H	1260	S	Ock/sh
266	4058-7749	T. Veal	do.	1979	H	1300	H	Ock/sh
267	4101-7746	R. Richner	do.	1980	H	980	S	Ock/sh
268	4101-7746	D. Confer	do.	1979	H	1090	S	Ock/sh
269	4101-7745	R. Boone	do.	1979	H	970	S	Ock/sh
270	4100-7748	Harold Dubbs	do.	1977	H	1240	S	Dck/sh
271	4100-7740	K. Robb	do.	1978	H	730	S	Oh/sh
272	4100-7740	Dr. L. Confer	do.	1978	H	735	S	Oh/sh
273	4103-7741	F. Heverly	Frank Copenhaver	1978	H	765	S	Olh/sh
274	4103-7744	Haven Homes	New Way Drilling Inc.	1978	H	1025	S	Ock/ss
275	4103-7741	Romola Ch.	Oscar Dearmit	1976	H	740	V	Olh/sh
291	4050-7742	Vern Coontz	Gilbert R. Zechman	1974	H	1378	V	Obf/ls
292	4049-7743	C. Brooks	Oscar Dearmit	1979	H	1405	S	Obl/sh
296	4054-7743	Leo Juenst	---	1978	H	1055	H	Obl/ls
297	4052-7743	Brooks Welding	Oscar Dearmit	1979	H	1085	S	Obf/ls
298	4053-7744	Ronald Weaver	Gilbert R. Zechman	1975	H	1085	H	Oa/ls
299	4054-7743	R. Payne	New Way Drilling Inc.	1978	H	1020	S	Oa/ls
300	4054-7743	do.	do.	1977	H	1015	V	Oa/---
301	4047-7804	N. King	Oscar Dearmit	1978	H	1120	S	Obh/sh
302	4047-7804	T. Stine	do.	1978	H	1050	S	Obh/sh
303	4047-7804	S. Connor	do.	1979	H	1120	S	Obh/sh
304	4047-7804	R. Reese	do.	1978	H	1160	S	Obh/sh
305	4047-7804	H. Reese	do.	1979	H	1080	S	Obh/sh
306	4048-7804	Melvin McMonigal	do.	1977	H	1180	S	Obh/sh
307	4047-7807	K. Lange	do.	1978	H	1400	S	Ock/sh
308	4047-7804	M. Mease	do.	1978	H	1360	S	Olh/sh
309	4046-7807	Glenn McClaster	do.	1977	H	1520	S	Olh/sh
310	4045-7807	Mary Gee	do.	1976	H	1150	V	Olh/sh
311	4046-7807	T. Hosband	do.	1978	H	1200	V	Obh/sh
312	4049-7805	F. Eernisse	do.	1979	H	1490	H	Ock/sh
313	4049-7805	N. Ellenberger	do.	1978	H	1490	S	Ock/sh
314	4049-7805	L. Witherite, Jr.	do.	1979	H	1560	S	Ock/sh
315	4049-7804	J. Woodring, Jr.	do.	1980	H	1360	S	Olh/sh
316	4048-7804	W. Gates	do.	1979	H	1100	V	Olh/sh
317	4046-7806	M. Nale	do.	1979	H	1140	S	Obh/sh
318	4050-7800	F. Henry	do.	1979	H	920	V	Obh/sh
319	4050-7803	R. Singer	do.	1978	H	1540	H	Ock/sh
320	4046-7805	C. Scheidell	do.	1979	H	1030	V	Oh/sh

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
185	107	6	---	46	6/67	43	.37	---	---	---	Ce-177
178	66	6	76;105;164	60	11/69	50	.64	---	---	---	178
480	41	6	192;370;400; 435;465	200	3/73	32	.68	---	---	---	186
40	29	6	30	10	1/72	100	3.3	---	---	---	188
275	165	12	20;60;100	114	6/69	500	7.8	13	---	7.4	190
90	---	---	---	27	1954	100	33	---	---	---	191
44	42	6	42	11	2/55	15	.88	---	---	---	192
151	18	6	---	44	3/54	12	.13	---	---	---	193
117	20	6	103	85	5/58	12	1.2	---	---	---	194
500	43	8	326;390	305	5/63	25	.28	1	---	6.7	195
175	36	6	140;168	62	9/66	15	.13	---	---	---	200
250	25	6	133;196;242	18	1/67	10	.04	---	---	---	201
150	74	6	99;126	70	4/67	6	.08	---	---	---	202
70	38	6	50	14	4/67	130	2.4	---	---	---	203
183	52	8	176	49	11/74	100	.75	---	---	---	204
225	29	6	---	40	6/65	60	6.0	---	---	---	207
350	51	6	---	11	1/66	10	.04	---	---	---	209
29	23	6	---	13	---	10	---	---	---	---	214
75	30	6	35;68	7	5/67	15	.24	1	---	6.0	215
75	42	6	48;69	5	5/67	25	1.2	1	---	6.3	216
445	413	6	---	---	---	12	---	---	---	---	218
399	170	18	176;200;208	118	1974	600	11	---	---	---	219
390	48	6	---	151	2/72	44	---	14	---	---	221
415	75	12	---	152	2/72	50	.25	12	---	7.7	222
242	22	8	---	12	1/69	500	110	11	---	7.8	223
50	---	6	---	3	1936	10	---	---	---	---	224
137	---	6	---	---	---	10	---	---	---	---	225
217	---	6	---	30	1936	10	.06	---	---	---	226
100	37	18	---	5	2/75	1600	53	---	---	---	227
100	24	18	41;85	14	6/75	1956	93	---	---	---	228
125	36	16	---	10	4/75	8000	380	---	---	---	229
420	125	6	---	105	1/68	12	.57	---	---	---	230
405	118	8	---	65	1978	600	40	---	---	---	231
300	120	8	---	89	8/67	120	---	6	---	7.8	233
300	134	8	---	92	8/67	200	---	---	---	---	234
45	21	6	20;40	25	6/74	5	---	---	---	---	255
250	80	6	245	---	12/78	2	---	---	---	---	256
290	240	6	285	---	5/78	5	---	---	---	---	257
326	130	6	262;320	152	10/80	7	---	14	310	7.4	258
326	276	6	297;323	100	8/77	20	---	---	---	---	259
330	79	6	320	101	10/80	15	---	17	560	---	260
311	32	6	301	---	11/79	4	---	---	---	---	261
115	20	6	105	---	7/79	20	---	---	---	---	262
85	20	6	75	---	7/79	5	---	---	---	---	263
350	20	6	345	---	6/78	1	---	---	---	---	264
125	20	6	120	91	10/80	20	---	4	270	---	265
190	29	6	180	---	7/79	4	---	13	505	7.3	266
167	72	6	157	---	2/80	7	---	---	---	---	267
230	28	6	220	---	5/79	30	---	---	---	---	268
173	20	6	163	---	8/79	6	---	---	---	---	269
125	20	6	120	34	10/80	4	---	3	105	---	270
210	40	6	205	74	10/80	8	---	8	330	7.5	271
85	40	6	80	27	10/80	6	---	10	335	---	272
30	17	6	17;23	5	8/78	12	.80	---	---	---	273
200	50	6	90;170	90	10/78	4	.04	---	---	---	274
142	20	6	140	---	6/76	3	---	4	505	7.4	275
326	60	6	97;280;320	160	10/80	5	---	13	430	7.4	291
230	60	6	220	---	8/79	6	---	---	---	---	292
210	25	6	---	132	10/80	7	---	17	650	7.7	296
228	52	6	218	---	11/79	15	---	17	540	---	297
425	70	6	212;300;345	180	3/75	6	---	---	---	---	298
180	106	6	156;174	125	11/78	10	.08	16	590	---	299
120	55	6	118	90	11/77	10	---	---	---	---	300
210	35	6	205	32	10/80	2	---	2	120	8.2	301
145	42	6	140	---	5/78	4	---	2	140	---	302
125	24	6	115	---	5/79	10	---	---	---	---	303
230	20	6	225	---	7/78	3	---	4	200	---	304
170	20	6	160	---	7/79	10	---	---	---	---	305
135	30	6	130	---	9/77	1	---	---	---	---	306
185	40	6	180	34	10/80	20	---	3	145	8.5	307
85	34	6	80	22	10/80	15	---	6	280	8.2	308
250	30	6	245	135	10/80	5	---	7	310	---	309
60	20	6	60	19	10/80	8	---	4	215	8.2	310
85	31	6	80	---	7/78	5	---	---	---	---	311
290	53	6	280	152	10/80	8	---	5	210	---	312
330	40	6	325	---	11/78	1	---	---	---	---	313
370	40	6	360	---	5/79	1	---	---	---	---	314
76	49	6	66	---	2/80	7	---	---	---	---	315
43	31	6	33	7	10/80	10	---	4	380	---	316
85	30	6	---	---	8/79	10	---	---	---	---	317
85	63	6	80	36	10/80	30	---	---	---	---	318
540	34	6	535	---	5/78	1	---	---	---	---	319
120	38	6	110	9	10/80	75	---	---	---	---	320

TABLE 14.

Well location		Owner	Driller	Oate completed	Use	Alti- tude of land surface (feet)	Topo- graphic setting	Aquifer/ lithology
Number	Lat-Long							
Ce-321	4046-7805	R. Flick	Oscar Dearmit	1978	H	1120	S	Dbh/sh
323	4049-7756	W. 8arger	do.	1979	H	1160	V	Cg/ss
324	4050-7756	C. Musser	do.	1979	---	1160	S	Obe/ls
325	4050-7756	D. Schuckers	do.	1978	H	1295	S	Or/sh
326	4050-7754	Denny Anderson	do.	1976	H	1060	V	On/ls
327	4050-7754	G. Wheeler	do.	1979	H	1040	V	On/ls
328	4051-7757	T. 8otts	do.	8/79	H	1020	S	Obh/sh
329	4051-7756	S. Oowd	do.	6/79	H	960	S	DSkc/sh
330	4051-7756	E. Warren	do.	1980	H	930	S	Ooo/sh
331	4052-7756	J. Holobinko	do.	1979	H	1020	S	Dbh/sh
332	4052-7755	F. Schlegel	do.	1979	H	830	S	Obh/sh
333	4054-7750	H. Werner	do.	1978	H	1700	H	Oj/sh
334	4053-7752	E. A. Thomas	do.	1976	H	1700	H	Oj/sh
335	4055-7754	S. Appleyard	do.	1978	H	1160	S	Dlh/sh
336	4056-7754	K. Yearney	do.	1978	H	1420	S	Dck/sh
337	4056-7753	George Snoberger	do.	1977	H	1040	V	Dck/sh
338	4055-7754	Laird Confer	do.	1977	H	1020	S	Ock/sh
339	4052-7800	F. Moore	do.	1979	H	1540	S	Ock/sh
340	4053-7756	Wayne Richards	do.	1977	H	1330	S	Ock/sh
341	4047-7747	E. Perry	do.	1980	H	1140	S	Obf/sh
342	4047-7747	Oonald Johnson	do.	1977	H	1200	S	Obf/ls
343	4047-7747	J. P. Gallagher	do.	1977	H	1170	S	Obf/ls
344	4050-7750	L. Copper	do.	1979	H	1050	H	Osl/ls
345	4050-7750	G. Stocker, Jr.	do.	1979	H	1080	H	Osl/ls
346	4050-7750	P. Kurtz	do.	1979	H	1000	S	Osl/ls
347	4050-7750	G. Weller, Jr.	do.	1979	H	1025	H	Osl/ls
348	4050-7747	8urdett Oxygen	do.	1979	H	1120	V	Obf/ls
349	4052-7751	C. Knepper	do.	1978	H	1040	V	On/ls
351	4056-7742	Randy Robinson	do.	1976	H	895	S	On/ls
352	4056-7743	Paul Gentzel	do.	1979	H	842	S	Obl/ls
353	4055-7745	L. Spotts	do.	1978	H	950	S	Obf/ls
354	4057-7742	M. H. Catherman	do.	1978	H	940	V	Obl/---
355	4057-7742	K. Ripka	do.	1978	H	1025	S	Ocn/---
356	4058-7740	W. R. Resides	do.	1977	H	1070	S	Obl/ls
357	4058-7738	8ruce Wagner	do.	1977	H	955	S	Obf/ls
358	4058-7739	Oean Rogers	do.	1977	H	900	S	Obf/ls
359	4059-7737	Robert Fishburn	Russell R. 8rooks	1975	H	1022	V	On/---
360	4057-7742	O. Arbuckle	Oscar Oearmit	1978	H	1000	S	Obl/ls
361	4059-7737	William Piekielek	Russell R. 8rooks	1970	H	900	S	Obf/---
362	4059-7742	Pa. Game Comm.	Wieand 8rothers	1973	P	690	V	Doo/---
363	4059-7743	do.	do.	1975	---	780	S	Obh/---
364	4058-7738	J. 8enzie	Oscar Dearmit	1978	H	1042	H	Obf/ls
376	4104-7741	P. 8lyler	Frank Copenhaver	1979	H	1040	S	Dck/sh
377	4101-7744	R. Johnsonbaugh	Oscar Dearmit	1976	H	870	S	Ock/sh
378	4101-7745	L. Gilbert	do.	1978	H	960	S	Dck/sh
379	4101-7745	R. Hagg	do.	1978	H	910	V	Dck/sh
380	4102-7740	Ronald Litz	New Way Orilling Inc.	1977	H	960	H	Olh/sh
381	4102-7740	Robert Ranio	Russell R. 8rooks	1975	H	1005	S	Dlh/sh
382	4101-7743	Cameron Walker	Oscar Oearmit	1976	H	1030	S	Dck/sh
383	4104-7738	Ted Laubscher	do.	1976	H	760	S	Dlh/sh
384	4104-7738	Continental Constr.	do.	1977	H	760	S	Olh/sh
385	4104-7739	Chester Walker	New Way Orilling Inc.	1977	H	695	S	Dlh/sh
386	4102-7739	Paul Thompson	do.	1977	H	1050	S	Dlh/sh
387	4103-7736	J. 8rickley	do.	1979	H	615	F	Dh/sh
388	4103-7736	Robert Shady	Wayne C. Murray	1973	H	560	F	Doo/sh
389	4104-7738	Sally McClackey	Oscar Oearmit	1977	H	745	F	Olh/sh
390	4104-7739	Ronald Welch	do.	1977	H	705	S	Olh/sh
391	4104-7740	Johnsonbaugh	do.	1977	W	700	S	Dlh/sh
392	4103-7740	L. E. Lucas	do.	1977	H	760	F	Olh/sh
393	4104-7738	P. Confer	do.	1979	H	690	S	Dlh/sh
394	4103-7735	G. Oietz	New Way Orilling Inc.	1980	H	610	F	OSkm/---

CLEARFIELD

Cf- 14	4047-7823	James Mines	---	---	H	1710	H	Pp/---
16	4046-7833	A. E. Kanarr	I. A. 8lack	---	P	1500	S	Pp/---
17	4046-7833	Hiram Swanks Sons, Inc.	---	---	N	1380	V	Pp/ss
18	4045-7832	Coalport 8or.	J. G. North	1902	P	1400	V	Pp/---
19	4045-7832	do.	---	1904	P	1400	V	Pp/ss
24	4045-7840	J. K. Mosser Leather Corp.	---	---	N	1340	V	Pp/ss
25	4045-7840	do.	---	---	N	1460	V	Pp/---
32	4053-7826	New York Central R. R.	---	---	E	1300	V	Mb/---
57	4058-7830	Franklin Tanning Co.	---	---	N	1140	V	Pa/ss
59	4057-7830	New York Central R. R.	Y. F. Yarrison	---	U	1170	V	Pa/ss
66	4111-7808	Curtiss-Wright Corp.	Pennsylvania Drilling Co.	---	U	2090	H	Pp/---
67	4111-7808	do.	---	---	U	2090	S	Pp/---
72	4103-7808	New York Central R. R.	I. A. 8lack	---	N	940	V	Mb/ss
75	4101-7825	Elk Tanning Co.	---	---	N	1110	V	Pp/---
77	4101-7825	New York Central R. R.	---	1924	E	1100	V	Pp/sh
78	4100-7827	Am. Mond Nickel Co.	I. A. 8lack	---	U	1100	V	Pp/ss
118	4112-7838	Pa. Core Hole #1	Harvey Oiamond Orilling Co.	1969	U	1630	S	Pcg/---
141	4112-7831	Lady Jane Mines #1	Delp 8rothers	1972	N	1745	H	Pcg/---
142	4111-7832	Lady Jane Mines #2	Forsyth Orilling Co.	1974	N	1390	S	Pa/sh
144	4110-7838	Sam Depra	do.	1974	H	1745	H	Pcg/---

(CONTINUED)

Total depth below land surface (feet)	Casing: Depth (feet)	Casing: Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
125	34	6	120	---	10/78	4	---	---	---	---	Ce-321
120	114	8	115	---	1/79	150	---	---	---	---	323
135	133	6	125	65	10/80	60	---	14	430	8.4	324
370	24	6	365	40	10/80	1	---	5	260	---	325
83	75	6	80	26	10/80	60	---	11	430	7.9	326
85	74	6	75	---	9/79	50	---	---	---	---	327
125	20	6	115	---	8/79	6	---	---	---	---	328
105	92	6	95	33	10/80	60	---	8	360	---	329
137	127	6	127	---	2/80	60	---	---	---	---	330
167	20	6	157	52	10/80	6	---	---	---	---	331
126	38	6	116	32	10/80	10	---	---	---	---	332
250	73	6	245	---	1/78	8	---	---	---	---	333
205	30	6	80	33	10/80	1	---	5	230	7.6	334
165	30	6	160	---	7/78	5	---	5	240	---	335
250	40	6	245	---	11/78	2	---	---	---	---	336
65	20	6	60	---	8/77	10	---	---	---	---	337
105	22	6	100	---	1/77	9	---	---	---	---	338
250	60	6	245	---	3/79	4	---	---	---	---	339
125	30	6	120	71	10/80	15	---	---	---	---	340
105	85	6	95	---	1/80	6	---	---	---	---	341
245	70	6	240	109	11/80	---	---	---	---	---	342
245	30	6	240	---	1/77	3	---	---	---	---	343
320	220	6	310	---	6/79	20	---	10	340	---	344
230	168	6	220	190	11/80	8	---	---	---	---	345
290	180	6	280	---	7/79	5	---	8	330	---	346
250	183	5	240	---	5/79	10	---	---	---	---	347
290	120	6	280	117	11/80	20	---	12	470	---	348
145	107	6	140	---	2/78	20	---	---	600	---	349
124	30	6	120	---	11/76	15	---	---	---	---	351
60	30	6	50	37	10/80	20	---	19	740	7.7	352
182	40	6	177	80	10/80	60	---	17	610	---	353
215	55	6	210	---	7/78	10	---	---	---	---	354
317	137	5	212	140	10/80	15	---	12	430	---	355
350	75	6	345	---	10/77	1	---	---	---	---	356
265	20	6	262	---	3/77	75	---	16	570	---	357
65	48	6	62	56	10/80	30	---	17	605	7.7	358
241	42	6	120;175;233	43	9/75	50	---	---	---	---	359
370	45	6	80	44	10/80	1	---	---	---	---	360
95	56	6	83	26	10/70	30	---	13	575	---	361
136	44	10	130	---	3/73	33	---	13	590	7.7	362
298	38	10	---	---	1975	1	---	---	---	---	363
330	40	6	325	---	7/78	4	---	---	---	---	364
95	58	6	46;76	33	9/79	4	.08	---	---	---	376
100	20	6	100	---	6/76	90	---	---	---	---	377
210	20	6	205	---	7/78	4	---	---	---	---	378
125	57	6	120	13	10/80	8	---	12	500	7.3	379
300	61	6	160	128	5/77	3	.02	---	---	---	380
376	31	6	140;369	114	4/75	2	---	---	---	---	381
155	20	6	155	F	10/80	12	---	8	355	7.5	382
300	20	6	80	---	6/76	1	---	3	365	7.2	383
265	20	6	200	---	6/77	20	---	---	---	---	384
160	30	6	---	21	10/80	5	.08	3	290	---	385
200	40	6	60	40	6/77	2	.01	---	---	---	386
60	21	6	40	30	7/79	20	.66	---	---	---	387
83	54	6	78	56	9/73	20	3.6	10	324	8.01	388
125	32	6	120	---	---	8	---	---	---	---	389
250	35	---	245	---	---	1	---	3	145	---	390
290	40	6	285	50	6/81	1	---	1	385	---	391
165	24	6	160	---	---	12	---	---	---	---	392
190	20	6	180	---	---	8	---	---	2950	---	393
100	47	6	55	10	1/80	60	.66	9	300	---	394

COUNTY

81	20	6	---	50	---	3	---	---	---	---	Cf- 14
165	---	6	---	50	---	2	---	---	---	---	16
90	---	8	---	13	---	50	---	---	---	---	17
100	---	8	---	16	6/23	70	70	---	---	---	18
128	---	8	---	16	6/34	70	---	---	---	---	19
175	---	8	---	6	---	200	---	---	---	---	24
175	---	6	---	6	---	50	---	---	---	---	25
83	30	6	---	8	---	100	6.6	---	---	---	32
162	---	6	---	11	---	100	---	---	---	---	57
75	25	6	---	13	---	100	20	---	---	---	59
700	---	---	---	130	---	37	---	---	---	---	66
247	---	---	---	131	---	5	---	---	---	---	67
90	36	6	---	20	---	95	24	---	---	---	72
170	24	8	---	26	---	85	4	---	---	---	75
150	22	10	---	12	---	370	---	---	---	---	77
107	50	12	---	10	---	832	33	---	---	---	78
716	16	3	---	55	4/73	---	---	---	---	---	118
606	25	10	---	130	5/73	20	---	---	---	---	141
170	21	6	---	40	10/74	20	---	---	---	---	142
205	60	6	---	90	1975	3	---	---	---	---	144

TABLE 14.

Well location: Number	Well location: Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/lithology
Cf-148	4101-7841	Norm Shaffer	Forsyth Drilling Co.	1974	H	1920	S	Pa/---
152	4101-7840	Elva Hendricks	do.	1975	H	1835	S	Pp/ss
196	4101-7838	G. McDonald	do.	1978	H	1880	F	Pa/ss
197	4100-7837	Tom Allison	do.	1975	H	1860	F	Pa/ss
198	4100-7836	Philip Donohoe	do.	1977	H	1780	S	Pa/ss
199	4058-7840	Ed McComb	do.	1975	H	1980	S	Pcg/sh
200	4052-7842	Charles Griffith	Gordon B. Miller	1977	H	1670	H	Pcg/---
201	4052-7843	James Bartlebaugh	Robert L. Crytser, Jr.	1975	H	1300	F	Pa/---
202	4057-7837	Robert Lee	do.	1975	H	1600	S	Pa/ss
203	4057-7837	Lee Haag	do.	1975	H	1640	S	Pa/---
204	4059-7836	Charles Mahlon	Forsyth Drilling Co.	1976	H	1760	H	Pa/ss
205	4055-7845	Howard Soliday	Gordon B. Miller	1977	H	1780	H	Pa/sh
206	4100-7840	J. Toner	Forsyth Drilling Co.	1978	H	1940	S	Pa/sh
207	4101-7838	R. Gregory	Robert L. Crytser, Jr.	1980	H	1820	F	Pa/sh
208	4100-7837	Marlene Good	Forsyth Drilling Co.	1975	H	1880	F	Pa/ss
209	4101-7840	V. Larimer	Robert L. Crytser, Jr.	1979	H	1820	F	Pp/sh
210	4101-7840	E. Waite	do.	1980	H	1820	F	Pp/---
211	4006-7838	John Olery	Forsyth Drilling Co.	1975	H	1720	F	Pa/ss
212	4106-7839	Louise Saxton	Gary A. Lindemuth	1975	H	1700	F	Pa/---
213	4103-7839	S. Heuser	Walter T. Smouse, Jr.	1978	H	1820	H	Pp/---
226	4052-7816	Lee Spencer	Oscar Dearmit	1976	H	1655	H	Pcg/---
227	4045-7827	Ada Lender	Forsyth Drilling Co.	1972	H	1802	S	Pcg/---
228	4057-7828	Clifford Fulmer	do.	1976	H	1310	S	Pcg/---
229	4054-7830	Don Pentland	do.	1974	H	1410	V	Pp/ss
230	4055-7827	Glen Weed	do.	1976	H	1660	H	Pa/---
231	4102-7820	Robert Harris	do.	1976	H	1470	S	Pa/---
232	4059-7827	Croft Fruit Market	Robert L. Crytser, Jr.	1975	H	1130	V	Pa/---
233	4059-7828	A & R Supply Co.	do.	1975	H	1115	V	Pa/sh
234	4059-7824	Annabelle Brown	Forsyth Drilling Co.	1976	H	1220	S	Pp/---
235	4111-7824	Robert Harris	do.	1972	H	1950	S	Pp/---
236	4111-7823	Ray Fargo	do.	1972	H	2010	S	Pp/---
237	4113-7834	Chester Parks	Robert L. Crytser, Jr.	1975	H	1590	S	Pcg/sh
238	4113-7833	Brian Smith	Forsyth Drilling Co.	1972	H	1220	V	Pa/sh
239	4113-7834	Harry Parks	Robert L. Crytser, Jr.	---	H	1602	H	Pcg/---
240	4113-7835	Bernard Hollinshead	do.	1975	H	1390	S	Pcg/---
241	4111-7835	Crystal Garvin	do.	1978	H	1270	V	Pcg/---
242	4112-7835	W. Woodward	do.	1977	H	1250	V	Pcg/---
243	4112-7836	F. Keller	Forsyth Drilling Co.	1978	H	1305	V	Pcg/---
244	4112-7836	Marlin Hoffer	do.	1976	H	1330	S	Pcg/sh
245	4111-7835	L. Anderson	C. & I. Enterprises	1978	H	1282	V	Pcg/---
246	4111-7836	Richard McKelver	Gordon B. Miller	1978	H	1500	S	Pcg/sh
247	4111-7836	do.	---	1963	H	1440	S	Pcg/---
248	4111-7836	Santo Provanzano	Forsyth Drilling Co.	1972	H	1450	S	Pcg/---
250	4108-7832	Dave Long	do.	1976	H	1915	S	Pa/---
256	4111-7841	J. Hilliard	Robert L. Crytser, Jr.	1978	H	2000	H	Pa/---
257	4045-7830	John O'Donnell	Forsyth Drilling Co.	1976	H	1680	S	Pcg/sh
258	4046-7833	Ralph Lindsey	do.	---	H	1420	S	Pp/ss
259	4046-7836	John Hilliard	do.	1976	H	1670	V	Pcg/ss
260	4051-7846	Purchase Line Sch. Dist.	Donald R. Lightcap	1974	T	1330	S	Pa/sh
261	4046-7844	Andy Neff	Wilson Electric Pumps	1976	H	1745	F	Pa/sh
262	4047-7842	James Beck	do.	1975	H	1655	S	Pcg/sh
263	4047-7842	Dennis Young	do.	1976	H	1625	S	Pcg/sh
264	4042-7843	William Young	do.	1979	H	1720	H	Pcg/---
265	4044-7843	George Moyer	do.	1979	H	1665	S	Pcg/---
266	4044-7844	Calvary Evangelical Ch.	do.	1979	T	1595	H	Pcg/---
267	4051-7843	Eugene Reighart	Dinger Bros. Drilling	1973	H	1665	S	Pcg/ss
268	4046-7843	Floyd Sharp	Wilson Electric Pumps	1979	H	1705	S	Pcg/ss
269	4055-7834	Walter McKracken	Forsyth Drilling Co.	1976	H	1185	V	Pp/ss
270	4053-7835	E. Dimmick	Byron L. Stockdale	1979	H	1390	S	Pa/---
271	4057-7831	Curwensville Dam	Gordon B. Miller	1978	H	1150	V	Pa/sh
272	4057-7830	O. Lezzer	Robert L. Crytser, Jr.	1979	H	1320	S	Pa/sh
273	4059-7830	Robert Smith	Forsyth Drilling Co.	1976	H	1455	S	Pa/sh
274	4059-7830	Steve Goodman	Robert L. Crytser, Jr.	1979	H	1405	S	Pa/---
275	4057-7833	Richard Hoover	Forsyth Drilling Co.	1975	H	1610	S	Pa/ss
276	4057-7836	W. Lines	do.	1974	H	1545	S	Pa/ss
277	4057-7836	do.	do.	1974	H	1580	S	Pa/ss
279	4057-7835	Harold Shaw	do.	1972	H	1640	S	Pa/sh
282	4111-7830	Pa. Bur. of St. Pks.	R. R. Hornberger	1971	U	1610	V	Pp/ss
283	4112-7831	Lady Jane Mines	Sherman E. Barber	1972	N	1742	H	Pcg/---
284	4114-7834	Dale Crawford	Robert L. Crytser, Jr.	1974	H	1615	H	Pcg/---
285	4114-7834	Dennis Crawford	do.	1975	H	1600	H	Pcg/---
286	4114-7832	Penn State Univ.	Russell R. Brooks	1969	T	1218	V	Pa/---
CLINTON								
Cn- 1	4114-7746	Pa. State Forest	---	1940	U	2500	H	Pp/ss
3	4106-7728	Suburban Water Co.	---	---	P	580	V	DSkm/ls
6	4106-7729	Sheffield Farms	---	---	N	570	V	DSkm/ls
8	4107-7725	Castanea Ice and Beverage Co.	---	---	U	700	S	Sc/sh
9	4107-7725	Lock Haven	---	---	U	700	V	Sc/ls
10	4107-7726	Am. Aniline Prod. Co.	---	---	F	550	V	DSkm/ls
12	4108-7726	Clinton Ice Coal Co.	---	---	Z	550	V	Dh/ls
13	4108-7726	Lock Haven Auto Co.	---	---	N	550	V	Dh/sh
14	4108-7727	Kistler Leather Co.	---	---	U	560	V	Dh/sh

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
105	30	6	---	42	11/75	15	---	---	---	---	Cf-148
45	21	6	---	---	3/75	12	---	---	---	---	152
120	20	6	40;110	55	9/80	7	---	---	---	---	196
135	---	6	120	---	12/75	7	---	---	---	---	197
160	20	6	135	---	1/77	5	---	3	105	7.4	198
135	20	6	65	---	12/75	4	---	---	---	---	199
204	23	6	90;161	98	9/80	4	---	4	185	7.65	200
92	12	6	60	42	12/75	---	---	---	---	---	201
82	48	6	70	42	5/75	30	---	2	70	---	202
60	20	6	50	20	4/75	30	---	---	---	---	203
175	20	6	70;152	---	10/76	7	---	---	---	---	204
84	20	6	47	---	5/77	3	---	---	---	---	205
170	20	6	65;155	---	9/78	5	---	---	---	---	206
63	15	6	45	8	4/80	8	.14	---	---	---	207
120	20	6	45;95	---	10/75	10	---	3	170	7.6	208
58	21	6	40	18	9/80	10	---	---	---	---	209
30	22	6	22	6	4/80	30	---	---	---	---	210
195	30	6	65;170	59	9/80	6	---	7	240	---	211
40	30	6	---	---	8/75	7	---	---	---	---	212
61	20	6	25;40	---	12/78	7	---	---	---	---	213
245	80	6	125	---	11/76	1	---	---	---	---	226
80	21	6	---	---	9/72	10	---	13	410	7.7	227
90	26	6	78	45	9/80	8	---	20	695	---	228
45	33	6	35	---	6/74	20	---	---	---	---	229
130	20	6	70;122	---	6/76	7	---	9	360	---	230
210	20	6	120;190	29	9/80	9	---	---	---	---	231
72	25	6	45;60	22	2/75	40	---	3	620	---	232
61	39	6	50	20	2/75	40	---	16	1350	---	233
130	21	6	115	---	7/76	12	---	---	---	---	234
100	21	6	90	---	8/72	4	---	---	---	---	235
80	20	6	75	---	8/72	5	---	---	---	---	236
85	21	6	35	35	9/75	6	.12	7	270	---	237
200	49	6	60;180	---	11/72	12	---	---	---	---	238
105	22	6	55	---	---	5	---	---	---	---	239
110	15	6	40;60	40	8/75	30	---	---	---	---	240
76	46	6	65	20	11/78	30	---	---	---	---	241
84	48	6	75	2	10/80	20	---	2	765	7.6	242
48	38	6	42	8	10/80	12	---	9	480	---	243
80	18	6	62	---	5/76	7	---	---	---	---	244
85	45	6	50;68	15	10/80	20	2.0	14	1750	---	245
244	20	6	40;145	116	10/80	1	---	8	325	7.5	246
55	20	6	20	18	10/80	3	---	9	---	---	247
220	21	6	170	---	8/72	2	---	---	---	---	248
170	20	6	74;158	---	9/76	8	---	---	---	---	250
310	20	6	210	210	9/78	3	.03	---	---	---	256
100	20	6	42;85	---	2/76	5	---	---	---	---	257
70	35	6	62	---	---	5	---	---	---	---	258
60	26	6	55	---	8/76	7	---	---	---	---	259
213	42	8	---	---	3/74	40	1.0	---	---	---	260
60	32	6	---	26	12/76	15	.68	---	---	---	261
105	31	6	---	---	5/75	5	---	---	---	---	262
150	62	6	---	120	12/76	20	---	---	---	---	263
150	31	6	---	57	9/80	7	---	7	265	---	264
90	28	6	---	80	2/79	10	---	---	---	---	265
165	30	6	---	---	3/79	12	---	---	---	---	266
140	20	6	40;130	---	9/73	5	---	---	---	---	267
150	24	6	---	75	10/80	10	---	---	---	---	268
130	20	6	118	24	10/80	10	---	4	105	7.6	269
80	25	6	70;80	---	9/79	20	---	---	---	---	270
104	20	6	60	---	8/78	10	---	---	---	---	271
163	22	6	153	123	5/79	30	---	15	415	7.3	272
238	---	6	220	---	10/76	5	---	---	---	---	273
126	20	6	105	86	8/79	8	---	---	---	---	274
170	20	6	65;150	---	7/75	4	---	5	125	7.2	275
60	30	6	48	---	10/74	15	---	---	---	---	276
80	29	6	55	---	7/74	12	---	---	---	---	277
85	29	6	74	---	7/72	10	---	---	---	---	279
.85	21	8	70	F	9/75	160	10.6	---	---	---	282
606	25	10	168;300	132	9/72	2	---	---	---	---	283
62	14	6	50	28	6/74	20	---	---	---	---	284
51	15	6	40	25	1/75	20	---	---	---	---	285
125	55	8	80;105	13	2/69	60	---	---	---	---	286
COUNTY											
78	38	6	---	49	8/50	5	2.2	---	---	---	Cn- 1
482	40	8	---	75	---	300	---	---	---	---	3
101	90	8	---	5	---	800	---	---	---	---	6
360	50	6	---	16	---	10	---	---	---	---	8
400	30	8	---	3	7/34	50	---	---	---	---	9
255	150	8	---	32	---	556	---	---	---	---	10
230	125	6	---	45	---	150	---	---	---	---	12
78	---	6	---	26	---	16	---	---	---	---	13
550	---	8	---	20	---	12	---	---	---	---	14

TABLE 14.

Well location						Alti- tude of land surface (feet)	Topo- graphic setting	Aquifer/ lithology
Number	Lat-Long	Owner	Driller	Date completed	Use			
Cn- 24	4110-7718	Penn Central R. R.	---	---	U	550	V	DSkm/ls
26	4111-7717	A. K. Bobst	---	---	N	540	V	Qal/sg
32	4104-7725	Fred Nixon	---	---	H	740	V	Obf/ls
43	4121-7742	J. K. Mosser Leather Co.	---	---	U	675	V	Dck/ss
44	4121-7742	do.	---	---	U	680	V	Mb/sh
47	4119-7743	Assoc. Gas and Elec. Co.	C. W. Yarrison	---	N	660	V	Mb/sh
49	4119-7745	Renovo Coal and Ice Co.	---	---	N	670	V	Mb/ss
57	4119-7745	Penn Central R. R.	---	---	Z	670	V	Mb/ss
58	4115-7753	do.	---	---	U	725	V	Mb/sh
62	4111-7717	Jersey Shore Water Co.	---	1940	P	550	V	Qal/---
63	4111-7717	do.	Layne-New York Co.	1964	Z	551	V	Qal/---
69	4111-7717	do.	---	1955	P	550	V	Qal/---
77	4104-7734	Beech Creek Bor.	Kohl Bros.	1964	P	---	V	DSkm/---
80	4120-7742	Bucktail Area Joint Sch. Bd.	Germania Well Drilling Co.	1964	P	740	V	Dck/---
81	4115-7726	Chatham Water Co.	Kohl Bros.	---	P	---	V	Mb/---
84	4112-7727	Suburban Lock Haven Water Authority	do.	1942	P	---	V	Mb/---
85	4112-7728	do.	Germania Well Drilling Co.	1952	P	---	V	Mb/---
97	4105-7736	Mark Confer	Frank Copenhaver	1977	H	805	S	Dlh/sh
98	4105-7736	H. Crawford	New Way Drilling Inc.	1978	H	865	S	Dlh/sh
99	4105-7733	L. Guerriero	Frank Copenhaver	1978	H	620	F	Dh/sh
100	4105-7732	M. Corman	New Way Drilling Inc.	1978	H	590	V	DSkt/ls
101	4106-7731	L. Eminhizer	do.	1979	H	640	S	Dbh/sh
102	4059-7724	G. Wolfe	do.	1979	H	1230	S	Ocn/---
103	4058-7726	P. Musser	do.	1979	H	1200	S	Ocn/ls
104	4119-7738	James Chulak	do.	1976	H	660	V	Dck/---
105	4119-7738	B. Weaver	do.	1979	H	680	V	Dck/---
106	4119-7739	L. Lucas	do.	1978	H	740	V	Dck/---
107	4120-7738	B. Lucas	do.	1978	H	755	V	Dck/---
108	4120-7738	T. R. Farwell	Germania Well Drilling Co.	1973	H	700	S	Dck/---
109	4120-7738	H. Warrell	do.	1978	H	740	S	Dck/---
110	4120-7738	Peter Lopes	do.	1977	H	720	S	Dck/ss
111	4120-7742	D. Kelley	do.	1980	H	665	V	Dck/---
112	4122-7743	A. L. Glenn	Frank Copenhaver	1977	H	1690	H	Mb/---
113	4123-7743	Howard Sandoe	do.	1977	H	1725	H	Mb/ss
114	4120-7741	Joan Prebble	Germania Well Drilling Co.	1978	H	635	V	Dck/---
115	4120-7741	Cliff Williams	do.	---	H	640	V	Dck/---
116	4120-7741	Phyllis Bodley	New Way Drilling Inc.	1977	H	640	V	Qal/---
117	4120-7742	Ted Quinn	Germania Well Drilling Co.	1975	H	670	V	Qal/---
118	4120-7742	Rathmill	do.	1978	H	800	S	Dck/sh
119	4125-7740	W. Ross	---	1978	H	958	V	Dck/---
120	4124-7740	B. Allison	Frank Copenhaver	1979	H	900	V	Dck/---
121	4124-7740	J. Rishel	do.	1977	H	880	V	Dck/---
122	4125-7740	P. Zell	do.	1979	H	902	V	Dck/---
123	4124-7741	R. Passalacqua	Germania Well Drilling Co.	1979	H	920	S	Dck/---
124	4125-7750	E. Finnetrock	do.	1978	H	1720	H	Dck/---
125	4125-7750	K. Tome	do.	1981	H	1698	H	Dck/---
126	4109-7724	W. Hamberger	Frank Copenhaver	1977	H	740	S	Dbh/sh
127	4109-7724	do.	do.	1977	H	680	S	Dbh/sh
128	4110-7722	Richard Munro	do.	1980	H	600	S	Dbh/sh
129	4109-7723	Roy Timbelin	do.	1977	H	680	S	Dbh/sh
130	4110-7722	R. Harvey	do.	1978	H	640	S	Dbh/sh
131	4110-7722	R. Maguire	do.	1978	H	660	S	Dbh/sh
132	4110-7723	Donald Reish, Jr.	do.	1977	H	810	H	Dlh/---
133	4110-7723	R. Sorgen	do.	1979	H	720	S	Dlh/sh
134	4110-7723	E. Knecht	do.	1978	H	700	S	Dlh/sh
135	4110-7724	Wayne Love	do.	1978	H	940	H	Dlh/sh
136	4111-7725	Edward Latchet	do.	1980	H	840	S	Dck/sh
137	4111-7724	Lester Probst	do.	1977	H	860	S	Dck/sh
138	4111-7725	Richard Powers	do.	1977	H	860	S	Dck/sh
139	4110-7724	W. McRoe	do.	1978	H	880	S	Dlh/sh
140	4109-7724	E. Hamberger	New Way Drilling Inc.	1981	H	700	S	Dbh/sh
141	4111-7725	H. Barth	do.	1978	H	1660	S	Mmc/ss
142	4111-7726	L. Lachat	do.	1980	H	1400	S	Mb/ss
143	4111-7726	S. Sorgen	do.	1980	H	1400	S	Mb/ss
144	4111-7726	R. Miller	do.	1980	H	1460	S	Mb/ss
145	4107-7730	D. Bauman	Frank Copenhaver	1978	H	680	V	Dbh/sh
146	4109-7729	George Sheeler	do.	1977	H	820	V	Dck/sh
147	4108-7725	L. Bush	do.	1978	I	560	V	Qal/sg
148	4108-7723	Anthony Torsell	do.	1980	H	550	F	Qal/sg
149	4109-7724	Overdorf Drive Inn	do.	1979	H	640	V	Dbh/sh
150	4111-7725	A. Michele	New Way Drilling Inc.	1978	H	1580	H	Mmc/ss
151	4101-7730	J. Brungard	Gilbert R. Zechman	1980	H	758	S	Oba/ls
152	4101-7732	E. Stoltzfus	New Way Drilling Inc.	1980	H	925	F	Osl/ls
153	4106-7735	J. Moore	do.	1980	H	1019	S	Dck/ss
154	4105-7731	C. Thomas	do.	1980	H	580	S	DSkm/ls
155	4106-7731	P. Martin	do.	1980	H	700	S	Dbh/sh
156	4102-7729	Don Kramer	do.	1978	H	700	S	Obf/ls
157	4103-7726	Rhine	do.	1978	H	795	S	Obl/ls
158	4104-7726	D. King	do.	1981	H	670	S	Obf/ls

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
100	---	10	---	---	---	500	---	---	---	---	Cn- 24
16	16	8	---	1	---	33	---	---	---	---	26
180	20	6	---	12	---	13	---	---	---	---	32
450	64	10	---	11	---	---	---	---	---	---	43
140	38	8	---	35	---	---	---	---	---	---	44
88	80	6	---	20	---	10	---	---	---	---	47
110	30	6	---	60	---	50	---	---	---	---	49
300	---	8	---	---	---	60	---	---	---	---	57
96	44	6	---	20	---	200	---	---	---	---	58
47	41	12	15;25;35;36	15	9/42	350	22	---	---	---	62
48	---	8	---	25	12/64	108	8.31	6	---	---	63
36	20	96	---	19	8/74	180	10.6	9	---	---	69
100	38	6	---	---	---	100	3	---	---	---	77
200	86	6	---	---	---	120	.98	---	---	---	80
275	42	6	55;75;117;260	55	---	160	1.10	---	---	---	81
275	14	8	---	30	---	---	---	2	---	6.4	84
300	7	8	100	50	---	400	2.3	---	---	---	85
135	66	6	115	80	10/80	1	.01	---	---	---	97
160	22	6	120	80	5/78	5	.06	---	---	---	98
37	34	6	36	6	5/78	12	.5	---	---	---	99
40	22	6	40	5	8/78	60	1.9	---	---	---	100
80	21	6	40	35	6/79	8	.18	---	---	---	101
220	155	6	205;214	140	7/79	25	.31	---	---	---	102
180	126	6	171	135	7/79	20	.44	---	---	---	103
180	52	6	---	60	8/76	6	.04	---	---	---	104
100	71	6	85	60	11/79	20	0.5	---	---	---	105
80	62	6	---	32	6/81	25	0.5	1	50	---	106
100	33	6	80	25	6/81	5	.08	4	200	---	107
70	42	6	---	53	6/81	30	---	3	155	---	108
159	48	6	---	90	3/78	10	.12	---	---	---	109
172	57	6	---	49	8/77	9	.08	---	---	---	110
100	83	6	45	30	6/80	13	.20	8	345	---	111
110	11	6	90;110	40	3/77	14	.25	3	140	---	112
190	6	6	178	131	8/77	3	.07	---	---	---	113
58	45	6	---	---	9/78	12	---	---	---	---	114
95	---	---	---	19	6/81	12	0.2	6	330	---	115
48	48	6	---	18	6/81	20	0.7	2	105	---	116
60	59	6	---	---	9/75	20	---	8	410	---	117
120	54	6	---	---	11/78	10	---	---	---	---	118
85	27	3	---	18	6/81	12	---	7	1100	6.5	119
50	15	6	22;36;46	10	6/79	10	0.3	---	---	---	120
45	13	6	14;32	6	11/77	6	0.2	---	---	---	121
50	12	6	16;45	15	6/77	8	0.4	---	---	---	122
112	47	6	---	77	4/79	72	---	---	---	---	123
140	22	6	---	80	9/78	10	---	4	175	6.6	124
42	20	6	---	20	4/81	15	---	---	---	---	125
105	10	6	70;105	21	6/81	5	.07	5	210	---	126
75	25	6	---	18	10/77	8	.16	---	---	---	127
140	16	6	---	32	7/80	4	.05	---	---	---	128
120	18	6	41;115	55	7/77	14	.28	---	---	---	129
105	14	6	62;85;98	35	8/78	7	.14	---	---	---	130
85	13	6	39;51;82	30	11/78	5	.12	---	---	---	131
200	17	6	36;190	36	11/77	1	.01	3	240	7.8	132
50	13	6	32;44	14	5/79	16	0.8	---	---	---	133
65	9	6	48;60	40	4/78	9	.45	6	280	7.8	134
80	16	6	32;61;74	22	11/78	6	.13	3	175	8.0	135
50	8	6	47	28	9/80	17	2.1	---	---	---	136
55	40	6	44	19	9/77	14	.61	---	---	---	137
60	26	6	36;66	22	9/77	7	.23	1	55	8.6	138
75	21	6	38;56;68	26	5/78	12	.31	---	---	---	139
260	22	6	21	21	6/81	1	---	---	---	---	140
320	21	6	174;298	127	6/81	3	.01	---	---	---	141
140	24	6	125	60	10/80	5	.06	---	---	---	142
200	47	6	90;195	70	10/80	30	.23	---	---	---	143
200	27	6	140;178	106	6/81	10	.08	1	75	---	144
70	50	6	54	22	8/78	4	.11	---	---	---	145
100	14	6	60;96	20	6/77	4	---	4	220	---	146
37	37	6	---	17	5/78	9	1.1	---	---	---	147
45	44	6	---	---	10/80	---	---	8	380	8.0	148
76	29	6	36;65	10	4/79	4	.07	---	---	---	149
420	22	6	77;411	70	12/78	15	.04	---	---	---	150
251	105	6	190;235	130	7/80	6	---	---	---	---	151
220	104	6	---	---	10/80	---	---	---	---	---	152
240	33	6	76;206	80	10/80	4	.02	---	---	---	153
200	167	6	179;198	60	10/80	60	.43	---	---	---	154
200	21	6	80	80	9/80	2	.02	2	230	7.9	155
200	30	6	86;186	28	6/81	4	.03	11	325	8.0	156
160	65	6	140	54	6/81	30	.33	9	270	---	157
280	20	6	25	20	1/81	1	.01	---	---	---	158

TABLE 14.

Well location: Number	Well location: Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Cn-159	4103-7726	Glossner	New Way Drilling Inc.	1979	H	790	S	Obl/ls
160	4103-7726	Mary Reese	do.	1978	H	840	S	Ocn/ls
161	4104-7724	Ricky Watson	do.	1978	H	85	F	Ocn/ls
162	4104-7729	S. Berry	do.	1978	H	780	S	Obf/ls
163	4104-7729	T. Shafer	do.	1978	H	690	S	Obf/ls
164	4104-7729	D. Hoffman	do.	1980	H	635	V	Obl/ls
165	4104-7727	G. Long	do.	1978	H	755	S	Obf/ls
166	4104-7728	K. Walizer	do.	1977	H	740	S	Obf/ls
167	4101-7729	R. Crisinger	do.	1979	H	740	V	Obf/ls
168	4103-7726	E. Coleman	do.	1978	H	740	S	Obl/ls
169	4104-7728	R. Sementille	do.	1978	H	640	S	Obf/ls
170	4105-7726	Haven Homes	do.	1978	H	755	H	Obf/ls
171	4105-7726	do.	do.	1978	H	770	S	Obf/ls
172	4106-7724	T. Smith	do.	1979	H	940	S	Ocn/---
173	4106-7723	S. Terrill	do.	1980	H	1080	S	Or/---
174	4103-7726	C. Karmer	do.	1978	H	730	S	Obf/ls
175	4102-7719	Haven Homes Inc.	do.	1978	H	1590	S	Oj/ss
176	4109-7721	N. Verne	Frank Copenhaver	1977	H	600	V	DSkm/---
177	4109-7721	McElhatten United Methodist Ch.	do.	1977	H	580	V	Qal/---
178	4109-7721	T. Condo	do.	1978	H	600	V	DSkm/---
179	4109-7721	H. E. Munro	do.	1978	H	600	V	DSkm/sh
180	4109-7721	Wayne Twp. Fire Co.	do.	1977	F	590	V	DSkm/sh
181	4109-7720	Steven Simcox	do.	1977	H	600	S	DSkm/sh
182	4109-7720	S. Kershner	---	1978	H	630	S	DSkm/sh
183	4109-7722	E. Keen	---	1980	H	570	V	DSkm/sh
184	4109-7722	T. Shoemaker	Frank Copenhaver	1979	H	550	V	DSkm/sh
185	4111-7721	S. Randsdorf	do.	1979	H	760	S	Dlh/sh
186	4111-7721	R. Andrews	do.	1979	H	820	S	Dlh/sh
187	4110-7720	K. Adrian	do.	1978	H	750	S	Dlh/sh
188	4112-7719	D. Lomison	do.	1978	H	660	S	Dlh/sh
189	4112-7719	C. L. Moore	do.	1977	H	640	S	Dlh/sh
190	4112-7719	J. Combs	do.	1978	H	620	S	Dlh/sh
191	4112-7720	H. Hughes	do.	1977	H	680	S	Dlh/sh
192	4112-7721	M. Russel	do.	1978	H	860	S	Dlh/sh
193	4112-7720	Ray Bower	do.	1977	H	820	S	Dlh/sh
194	4111-7717	T. Doebler	do.	1979	H	550	V	Qal/---
195	4110-7720	Harry Knepp	do.	1977	H	600	V	Dlh/sh
196	4120-7728	R. Weigart	do.	1978	H	1720	S	Mb/ss
197	4115-7725	D. Crook	New Way Drilling Inc.	1979	H	1740	S	Mb/ss
198	4115-7725	Steve Stewart	Frank Copenhaver	1980	H	1740	S	Mb/ss
199	4114-7726	R. Biser	do.	1978	H	1740	H	Mmc/ss
200	4121-7730	R. Mervine	do.	1978	H	2020	H	Mb/ss
201	4105-7733	Sheldon Orner	do.	1977	H	670	F	Dh/sh
202	4105-7732	Bechdel Farm	do.	1978	H	665	S	Dh/ls
203	4106-7731	R. Love	do.	1977	H	630	S	Dbh/sh
204	4110-7732	D. Boone	do.	1978	H	580	S	MDhm/sh
205	4114-7735	B. Cebucka	Germania Well Drilling Co.	1978	H	640	H	MDhm/---
206	4110-7730	W. Dick	New Way Drilling Inc.	1977	H	640	H	Mb/ss
207	4110-7730	Fred McKeaque	Frank Copenhaver	1977	H	595	V	Mb/---
208	4108-7732	Phillips Wood Prod.	do.	1980	H	1060	F	Dck/sh
209	4104-7733	R. Irvin	New Way Drilling Inc.	1979	H	610	F	Doo/ss
210	4105-7736	K. Young	do.	1980	H	820	S	Dlh/sh
211	4105-7736	C. Young	do.	1980	H	810	S	Dlh/sh
212	4105-7736	A. Bittner	do.	1980	H	820	S	Dlh/sh
213	4105-7736	R. Young	do.	1980	H	820	S	Dlh/sh
214	4107-7731	Haven Homes	do.	1977	H	790	S	Dbh/sh
215	4106-7735	H. Moore	do.	1979	H	985	S	Dck/ss
216	4105-7732	T. Shafer	Frank Copenhaver	1979	H	590	F	DSkm/ls
217	4105-7732	G. Folmlee	do.	1978	H	590	F	Qal/---
218	4106-7730	G. Snyder	New Way Drilling Inc.	1978	H	602	S	DSkm/ls
219	4109-7730	P. Taylor	do.	1978	H	870	S	Dck/sh
220	4108-7731	Gordon Shaffer	do.	1977	H	900	S	Dck/sh
221	4118-7748	J. Hall	Germania Well Drilling Co.	1979	H	720	S	MDhm/ss
222	4118-7748	Perry	---	1979	H	735	S	MDhm/ss
223	4118-7745	T. Rustetter	New Way Drilling Inc.	1980	H	780	S	MDhm/sh
224	4118-7748	S. A. Poleto	Germania Well Drilling Co.	1977	H	685	F	MDhm/sh
225	4118-7748	J. Rosamailia	do.	1977	H	710	S	MDhm/---
226	4125-7751	M. Herner	do.	1979	H	1715	S	Dck/---
227	4125-7751	J. Calhoun	do.	1979	H	1732	S	Dck/---
228	4126-7750	R. Delp	do.	1979	H	1790	S	Dck/---
229	4126-7750	C. Wood	do.	1978	H	1710	S	Dck/---
230	4128-7749	C. Hedgeland	do.	1978	H	1140	S	Dck/---
231	4128-7749	J. Anderson	do.	1981	H	1110	S	Dck/---
232	4128-7749	R. Stenger	do.	1981	H	1140	V	Dck/---
233	4124-7754	G. Mansfield	do.	1979	H	1080	S	Dck/ss
234	4126-7753	J. Baldacchino	do.	1979	H	960	V	Dck/ss
235	4126-7752	Harry Dively	do.	1977	H	975	V	Dck/---
236	4126-7752	Gordon Repman	do.	1977	H	975	V	Dck/---
237	4127-7751	Jack Bruno	do.	1977	H	1000	V	Dck/---
238	4126-7753	J. Marolt	do.	1978	H	990	S	Dck/---
239	4126-7753	R. Ruskus	do.	1978	H	960	S	Dck/---
240	4125-7754	J. Hoy	do.	1978	H	960	V	Dck/---
241	4125-7754	L. Calhoun	do.	1979	H	980	V	Dck/---
242	4123-7754	L. Pierce	do.	1979	H	1130	S	Dck/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
290	70	6	160;284	115	6/81	60	.40	9	280	---	Cn-159
200	93	6	159;180	60	7/78	12	.08	---	---	---	160
220	162	---	210	180	12/78	12	.30	---	---	---	161
140	66	6	100	75	6/81	7	.10	24	600	---	162
200	61	6	180	110	9/78	15	.17	---	---	---	163
60	33	6	36;48	20	8/80	60	1.5	---	---	---	164
180	132	6	150	130	1/78	20	.40	---	---	---	165
200	49	6	100;170	65	9/77	20	.14	---	---	---	166
100	77	6	80;96	52	6/81	60	1.0	18	600	7.2	167
180	94	6	140;170	60	8/78	12	.01	---	---	---	168
140	21	6	80;120	58	6/81	15	.18	17	520	8.2	169
120	32	6	40;97	40	5/78	15	.18	---	---	---	170
220	20	6	189	80	8/78	20	.14	---	---	---	171
400	21	6	35;194	28	6/81	.5	.01	21	520	8.0	172
340	24	6	102;308	60	12/80	2	.01	---	---	---	173
100	20	6	40	20	3/78	6	.07	---	---	---	174
240	44	6	100	40	1/78	3	.02	---	---	---	175
145	57	6	84;120;140	30	9/77	6	.06	---	---	---	176
35	36	6	---	14	9/77	24	2.4	---	---	---	177
58	58	6	58	27	6/81	6	.21	3	130	8.2	178
245	58	6	124;196;215	30	5/78	5	.02	4	150	7.9	179
80	60	6	66	20	4/77	9	.20	---	---	---	180
90	39	6	57;85	40	7/77	12	0.3	---	---	---	181
115	79	6	105	52	10/78	26	---	---	---	---	182
200	42	6	71;172	60	9/80	3	.02	3	140	---	183
120	32	6	38;94;116	20	3/79	5	.05	3	140	8.0	184
98	18	6	36;62	---	5/79	3	---	4	320	---	185
150	18	6	64;96	35	5/79	4	.04	---	---	---	186
85	26	6	44;63;81	27	6/78	8	.16	4	395	---	187
90	36	6	65;84	62	6/81	14	.39	4	180	---	188
45	11	6	30;40	8	10/77	6	.22	---	---	---	189
80	22	6	48;76	F	6/78	6	.08	---	---	---	190
80	---	6	45;75	26	9/77	8	.17	---	---	---	191
49	29	6	32;46	20	8/78	8	.67	---	---	---	192
90	23	6	38;80	52	6/81	6	.09	4	185	---	193
48	49	6	---	29	8/79	20	2.2	---	---	---	194
80	49	6	56;75	14	5/77	6	.12	5	250	8.2	195
95	14	6	48;62;90	27	8/78	7	.14	---	---	---	196
140	33	6	100	70	1/79	45	.64	---	---	---	197
90	32	6	35;84	---	6/80	8	---	---	---	---	198
230	14	6	205;226	189	10/78	70	---	---	---	---	199
170	12	6	136;165	80	1/78	6	.07	---	---	---	200
64	23	6	36;60	22	10/77	---	.64	---	---	---	201
98	39	6	89;93;96	76	9/78	5	.45	6	230	7.3	202
55	14	6	24;48	10	11/77	45	2.04	8	310	6.6	203
60	25	6	42;57	11	9/78	9	.21	---	---	---	204
90	64	6	---	45	8/78	12	.34	2	92	7.5	205
40	22	6	30	10	9/77	60	2	5	198	7.55	206
14	10	6	14	3	9/77	10	1.4	---	---	---	207
115	19	6	65;100	41	6/81	3	1.4	4	140	7.6	208
80	35	6	70	34	2/79	60	1.30	---	---	---	209
160	24	6	55;142	33	6/81	4	.04	6	380	7.25	210
180	27	6	78	F	6/81	3	---	1	420	7.1	211
240	71	6	116	64	6/81	1	.01	---	---	---	212
180	56	6	98;143	60	7/80	2	.01	3	290	---	213
260	44	6	100	52	6/81	3	.02	3	375	---	214
120	21	6	113	F	6/79	20	.16	---	---	---	215
35	35	6	33	8	3/79	19	1.18	12	429	7.5	216
25	25	6	---	10	6/78	10	1.66	---	---	---	217
120	62	6	100	48	6/81	8	.4	13	520	7.95	218
120	22	6	40;100	40	6/78	5	.06	---	---	---	219
200	22	6	100	80	8/77	10	.08	3	300	6.8	220
86	65	6	---	51	9/79	20	.5	3	119	---	221
120	60	6	99	61	6/81	8	.2	3	115	6.8	222
200	152	6	180;196	66	6/81	60	.75	4	135	7.45	223
80	40	6	---	35	6/81	10	---	2	75	---	224
95	66	6	55	58	9/77	12	.4	---	---	---	225
221	30	6	---	125	6/81	3	---	4	230	6.9	226
338	21	6	235	297	9/79	4	---	---	---	---	227
326	37	6	---	290	10/79	9	---	---	---	---	228
259	13	6	---	215	1978	20	---	---	---	---	229
277	65	6	---	113	6/81	.25	---	2	550	7.3	230
95	23	6	---	64	6/81	40	---	---	---	---	231
58	20	6	---	20	4/81	20	---	---	---	---	232
258	15	6	190;245	70	1/79	15	---	---	---	---	233
41	23	6	---	36	1/79	5	---	8	360	6.6	234
40	26	6	40	---	8/77	16	---	---	---	---	235
63	25	6	---	20	8/77	1	.02	---	---	---	236
40	20	6	40	6	8/77	15	.62	---	---	---	237
85	15	6	---	54	9/78	20	---	---	---	---	238
103	36	6	---	70	5/78	1	---	---	---	---	239
69	43	6	---	49	6/78	12	---	---	---	---	240
100	79	6	---	66	6/81	8	.80	3	265	7.2	241
160	46	6	---	---	5/79	2	---	---	---	---	242

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Cm-243	4116-7753	Cooks Run Ranger	Donald K. Havens	1978	H	750	S	MOhm/---
244	4116-7752	W. Gaines	Germania Well Drilling Co.	1979	H	710	V	MOhm/---
245	4115-7754	Harry Seager, Jr.	do.	1974	H	718	S	MOhm/sh
246	4115-7754	F. D. Winner	do.	1973	H	715	V	MOhm/ss
247	4115-7754	J. F. Lehman	do.	1977	P	710	V	MOhm/---
251	4107-7715	Robert Bechdel	New Way Drilling Inc.	1976	H	860	S	Ocn/ls
252	4108-7714	Edward Williams	C. S. Garber & Sons, Inc.	1975	H	795	V	Obl/ls
253	4111-7728	P. Zelz	Frank Copenhaver	1979	H	910	S	Dlh/sh
254	4112-7724	Richard Saylor	do.	1977	H	1460	S	Mb/ss
255	4107-7715	J. D. Rimmerer	C. S. Garber & Sons, Inc.	1976	H	920	S	Ocn/sh
256	4109-7728	City of Lock Haven	Frank Copenhaver	1979	P	770	V	Ock/ss
257	4111-7722	Ronald Watkins	New Way Drilling Inc.	1976	H	740	S	Olh/sh
258	4115-7725	W. Moyer	do.	1978	H	1760	S	Mb/ss
259	4101-7731	Lamar Holiday Inn	Pennsylvania Drilling Co.	1972	C	860	S	Oba/ls
276	4101-7719	D. Schrack	New Way Drilling Inc.	1981	H	1340	S	Ocn/---
277	4101-7717	W. Confer	do.	1981	H	1335	S	Obl/ls
278	4106-7719	A. Kauffman	do.	1981	H	1300	S	Obl/ls
279	4101-7719	C. Breen	do.	1981	H	1280	S	Obl/ls
280	4101-7717	G. Walizer	do.	1978	H	1325	S	Obl/ls
281	4102-7717	F. Lamey	Gilbert R. Zechman	1978	H	1310	S	Ocn/---
282	4102-7716	J. Esh	New Way Drilling Inc.	1981	H	1590	S	Or/sh
283	4102-7715	Robert Gettys	Gilbert R. Zechman	1978	H	1340	S	Ocn/ls
284	4102-7715	Michael Clymer	New Way Drilling Inc.	1977	H	1310	S	Ocn/---
285	4102-7716	Ken Womeldorf	Gilbert R. Zechman	1977	H	1230	S	Obf/ls
286	4101-7718	Marvin Weaver	do.	1977	H	1295	S	Obf/ls
287	4100-7722	O. McCormack	New Way Drilling Inc.	1979	H	1255	S	Ocn/ls
288	4101-7722	T. Jeffries	do.	1980	H	1465	S	Ocn/---
289	4104-7720	Frank Brungard	do.	1977	H	1705	F	Oj/ss
290	4104-7720	E. Sollenburger	do.	1980	H	1720	S	Oj/ss
291	4104-7720	Marice Cooper	do.	1977	H	1780	S	Oj/ss
292	4103-7718	Allen Weaver	do.	1977	H	1730	S	Obe/ss
293	4103-7720	E. Watkins	do.	1978	H	1590	S	Oj/ss
294	4103-7718	L. Kulp	do.	1980	H	1680	S	Oj/ss
295	4102-7710	Glen Lupold	do.	1977	H	1325	S	Ocn/ls
296	4102-7713	H. Schreckengust	do.	1981	H	1395	S	Ocn/ls
297	4102-7713	Donnell Jeffries	do.	1977	H	1265	S	Ocn/ls
298	4101-7716	R. Velello	do.	1980	H	1370	S	Obl/ls
299	4101-7716	K. Smith	do.	1980	H	1405	S	Ocn/---
300	4101-7716	Shady Corners Restaurant	do.	1980	H	1375	S	Obl/ls
301	4118-7748	G. F. Lacy	Germania Well Drilling Co.	1977	H	740	S	MDhm/sh
302	4118-7750	M. B. Kaegler	do.	1977	H	750	S	MOhm/sh
303	4121-7755	P. Kanouff	do.	1977	H	830	S	Dck/---
304	4118-7750	C. Seia	---	1978	H	685	F	MDhm/sh
305	4118-7752	B. Anderson	Germania Well Drilling Co.	1978	H	1450	F	Pa/ss
306	4117-7750	P. O'Brien	New Way Drilling Inc.	1978	H	690	F	MDhm/ss
307	4116-7751	J. Kanouff	Germania Well Drilling Co.	1978	H	710	F	MDhm/ss
308	4115-7754	R. Brown	do.	1979	H	750	S	MOhm/---
309	4110-7730	Farm It Club	Frank Copenhaver	1978	H	600	S	Qal/---
310	4110-7732	Paul Bennet	do.	1977	H	620	S	MOhm/ss
311	4105-7733	G. Hoffman	New Way Drilling Inc.	1981	H	680	S	Obh/sh
326	4106-7728	Avery	do.	1980	H	580	S	OSkm/sh
327	4103-7717	W. Soo	do.	1980	H	1720	S	Oj/ss
328	4104-7712	T. Ware	do.	1979	H	1750	S	Obe/ss
329	4104-7712	O. Lamey	do.	1978	H	1775	S	Oj/ss
330	4104-7712	Clarence Scott	do.	1977	H	1700	S	Oj/ss
331	4107-7713	O. Hoover	do.	1979	H	985	S	Ocn/ls

ELK

Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ek-400	4115-7838	R. Meier	C. & I. Enterprises	1978	H	2310	H	Pp/---
401	4120-7820	S. Lonigor	do.	1978	H	1665	S	Dck/ss
402	4120-7820	W. Klass	do.	1978	H	1660	S	Pa/ss
403	4119-7819	C. Cox	do.	1978	H	995	S	Ock/ss
404	4120-7819	W. Warner	do.	1978	H	1015	S	Ock/ss
405	4120-7817	J. Quinn	do.	1978	H	960	S	Ock/sh
406	4122-7815	Pa. Dept. of Environmental Resources	Pure Water	1975	P	1030	V	Dck/ss
407	4129-7828	B. Kilhoffer	C. & I. Enterprises	1979	H	1470	V	MDhm/ss
408	4129-7826	J. Riedder	do.	1978	H	1340	S	MDhm/ss
409	4125-7829	B. Wolfe	Robert L. Crytser, Jr.	1979	H	1875	S	Pp/sh
410	4125-7829	Steve Wendel	C. & I. Enterprises	1977	H	1870	S	Pp/ss
411	4129-7834	Michael Ebert	do.	1977	H	2190	S	Pa/sh
412	4126-7829	William Greenthaner	Forsyth	1976	H	1755	S	Pp/ss
413	4126-7828	L. Herzing	C. & I. Enterprises	1979	H	1880	S	Pp/sh
426	4118-7823	Ben Roberts	do.	1977	H	1020	V	MOso/ss
427	4118-7823	B. Roberts	do.	1979	H	1030	V	MDso/---
428	4119-7823	Bruce Wendt	Robert L. Crytser, Jr.	1975	H	1040	V	MDso/sh
429	4118-7824	Ellis Hall	C. & I. Enterprises	1977	H	1040	V	MDso/sh
430	4018-7823	Joe Froesch	do.	1977	H	1040	V	MOso/sh
431	4118-7829	R. Bussoletti	do.	1979	H	1780	H	Pa/---

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level Depth below land surface (feet)	Static water level Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
144	62	6	114;134	35	6/81	26	.54	4	320	7.3	Cn-243
84	70	6	---	26	6/81	30	---	---	---	---	244
81	62	6	---	---	9/74	20	---	---	---	---	245
75	62	6	---	---	---	15	---	4	185	7.0	246
90	63	6	---	30	7/77	36	1.28	17	1700	6.2	247
250	157	6	240	143	6/81	25	.36	8	300	7.9	251
182	60	6	168	100	8/75	5	.06	7	280	8.5	252
100	19	6	62;96	51	6/81	6	.13	---	---	---	253
53	6	6	45	29	8/77	40	6.7	2	110	8.2	254
260	23	6	60;110	35	9/76	2	.007	---	---	---	255
75	47	6	62	22	6/81	22	.41	5	195	---	256
300	43	6	---	46	9/76	2	.01	---	---	---	257
140	22	6	80;118	55	3/78	4	.05	---	---	---	258
250	103	6	79;126;157; 204	66	9/72	83	6.9	17	---	7.6	259
240	25	6	50;81;153	18	7/81	12	.06	---	---	---	276
160	120	6	147	40	6/81	8	.09	11	260	8.0	277
130	100	6	115	40	1/81	45	.5	---	---	---	278
140	102	6	---	90	3/81	20	.40	---	---	---	279
160	95	6	144	120	9/78	10	.25	---	---	---	280
176	40	6	70;95;147; 171	45	6/78	20	---	---	---	---	281
100	34.6	6	52;83	14	6/81	15	.25	---	---	---	282
201	82	6	95;180	76	6/81	10	---	10	260	7.7	283
260	22	6	120	87	6/77	4	.02	17	500	7.3	284
201	120	6	174;197	58	6/81	10	---	17	580	7.5	285
251	184	6	200;220	70	8/77	10	---	---	---	---	286
220	55	6	200	160	9/79	20	.33	---	---	---	287
60	23	6	40	2	6/81	15	.50	6	220	7.5	288
160	20	6	140	55	6/77	30	.26	6	130	---	289
140	41	6	100	100	6/80	15	.38	---	---	---	290
182	21.3	6	100	100	3/77	6	.07	---	---	---	291
240	42	6	120	86	6/81	3	.02	4	120	7.35	292
100	21	6	80	65	7/78	25	.71	6	205	---	293
202	---	5	---	30	9/80	1	.01	---	---	---	294
40	4	6	40	10	6/77	10	2.0	---	---	---	295
240	42	6	216	80	1/81	60	.37	---	---	---	296
320	105	6	220;308	130	2/77	30	.16	11	310	---	297
100	41	6	---	70	5/80	60	2.0	8	260	---	298
200	135	6	157	140	5/80	12	.20	---	---	---	299
200	133	6	159;188	140	5/80	8	.13	---	---	---	300
140	84	6	---	---	---	8	---	---	---	---	301
85	61	6	85	---	---	12	.46	---	---	---	302
110	42	6	98;108	51	6/81	6	.75	2	60	7.25	303
90	50	6	80	18	6/81	30	.46	21	1800	7.3	304
58	26	6	---	30	6/81	12	.37	---	---	---	305
60	37	6	49	11	6/81	60	1.42	5	139	6.95	306
98	76	6	---	53	4/78	8	.16	2	60	---	307
55	45	6	---	---	---	10	---	---	---	---	308
40	40	6	---	26	6/81	8	1.14	3	119	---	309
84	50	6	54;79	49	3/77	30	.96	2	60	---	310
320	40	6	132;313	25	6/81	6	.03	2	1000	---	311
200	46	8	60	5	8/80	280	10	---	900	6.5	326
80	18	6	55;71	12	6/81	12	.34	1	50	7.4	327
400	21	6	370	---	---	6	---	---	---	---	328
200	22	6	160	115	4/78	3	.04	---	---	---	329
200	61.5	6	100	158	3/77	20	.03	---	---	---	330
260	40	6	186;240	170	8/79	6	.07	---	---	---	331
COUNTY											
110	12	6	75;105	64	10/80	16	1.6	---	---	---	Ek-400
110	8	6	45;90	45	11/78	10	.15	---	---	---	401
80	20	6	45;55;65;70	25	6/78	20	4.0	---	---	---	402
95	50	6	75	63	8/78	20	1.6	---	---	---	403
95	30	6	65;87	65	9/78	20	---	---	---	---	404
100	50	6	26;86	60	4/78	20	---	---	---	---	405
100	35	6	91	60	12/75	20	4.0	---	---	---	406
50	25	6	40	4	6/81	20	---	---	---	---	407
73	20	6	40;60	40	1/78	15	1.0	6	260	7.3	408
76	15	6	66	16	9/79	16	.13	---	---	---	409
101	11	6	20;95	15	10/77	7	---	---	---	---	410
175	10	6	140	38	7/81	3	---	6	195	8.2	411
90	21	6	76	---	---	7	---	---	---	---	412
75	17	6	50;60	22	7/81	15	1.5	6	160	---	413
60	40	6	45	30	6/77	20	4.0	---	---	---	426
85	30	6	35;70;75	20	7/79	16	1.1	2	150	8.1	427
77	29	6	40	40	9/75	30	---	---	---	---	428
60	40	6	45	11	6/81	20	2.0	4	230	7.9	429
75	60	6	63	40	5/77	20	4.0	---	---	---	430
110	45	6	48;85	42	6/81	7	.11	2	80	7.9	431

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Ek-432	4121-7833	R. Secco	C. & I. Enterprises	1979	H	2140	H	Pp/ss
433	4121-7832	Ed Pichler	do.	1977	H	2220	H	Pp/sh
434	4119-7830	A. Burkett	Robert L. Crytser, Jr.	1979	H	1830	S	Pp/sh
435	4119-7830	J. Carlson	---	1979	H	1740	S	Pp/ss
436	4116-7831	Ralph Smith	Zane Forsyth	1976	H	1720	H	Pcg/ss
451	4126-7830	F. Steinbach	C. & I. Enterprises	1978	H	1770	S	Pa/ss
452	4126-7830	J. Nickles	do.	1978	H	1780	H	Pa/sh
453	4126-7830	K. Leither	do.	1979	H	1735	S	Pa/---
454	4126-7830	R. Alexander	do.	1978	H	1698	S	Pp/ss
455	4126-7831	T. Myers	do.	1978	H	1819	S	Pa/sh
456	4126-7831	R. Daniels	do.	1978	H	1820	H	Pa/ss
457	4125-7831	M. Herzing	do.	1978	H	1765	S	Pa/ss
458	4125-7831	Grotzinger Equip.	do.	1978	N	1770	F	Pa/ss
459	4124-7830	Speer Carbon	do.	1977	N	1900	F	Pp/sh
460	4127-7832	D. Volmer	do.	1978	H	1640	F	Pp/sh
461	4128-7831	H. Gerg	do.	1980	H	1780	S	Pa/sh
462	4128-7832	do.	do.	1980	H	1780	S	Pa/sh
463	4127-7832	T. Thorne	do.	1978	H	1780	F	Pp/sh
464	4127-7832	D. Bleggi	do.	1979	H	1635	F	Pp/---
465	4126-7830	David Ehrensberger	Zane Forsyth	1974	H	1705	S	Pp/sh
								INDIANA
In- 40	4048-7849	Glen Campbell Water Co.	---	1955	P	1380	V	Pa/---
								LYCOMING
Ly- 2	4114-7658	McDaniels Dairy	---	---	N	520	V	Doo/sh
7	4114-7658	John Peters	C. W. Yarrison	---	N	520	V	Doo/sh
8	4114-7857	F. M. Haug	---	---	---	510	V	Doo/ls
9	4112-7655	D. B. Plasan	---	1934	H	1200	S	Oj/ss
12	4112-7649	State Corr. Inst.	---	---	P	535	S	Qal/sg
13	4112-7649	do.	---	---	P	550	S	Qal/sg
19	4111-7646	Muncy Water Supply Co.	---	---	P	520	V	Qal/sg
20	4112-7647	Muncy Ice Co.	---	---	N	505	V	Swc/ls
22	4112-7647	Muncy Water Supply Co.	---	---	---	485	V	Sbm/sh
23	4112-7647	do.	---	---	---	485	V	Sbm/sh
24	4112-7647	do.	---	---	---	485	V	Sbm/sh
25	4112-7647	do.	---	---	P	485	V	Sbm/sh
26	4114-7702	Williamsport Munic. Water Authority	---	---	P	515	V	Qal/sg
29	4113-7704	Keystone Glue Co.	Sprague & Henwood, Inc.	---	N	530	V	Qal/sg
30	4113-7704	do.	---	---	N	530	V	Qal/sg
31	4114-7702	J. K. Mosser Leather Co.	---	---	N	530	V	Qal/sg
32	4114-7702	do.	---	1890	N	530	V	Dh/sh
33	4114-7702	Williamsport Munic. Water Authority	---	1891	P	525	V	Qal/sg
36	4114-7700	Stewart Artificial Ice Co.	C. W. Yarrison	1932	N	520	V	Doo/ss
38	4114-7700	Sun-Gazzette Co.	do.	1929	N	535	V	Doo/sg
39	4114-7700	Williamsport Narrow Fabric Co.	do.	---	---	560	V	Dh/sh
47	4118-7721	Robert Crosthwaite	Harris W. Barto	1966	C	620	V	Dck/---
48	4113-7659	William McGinis	---	---	N	625	V	Sbm/st
51	4114-7702	Williamsport Munic. Water Authority	---	---	P	515	V	Qal/sg
66	4115-7655	Montoursville Water Co.	---	---	P	535	V	Qal/sg
68	4113-7702	Wiliamsport Munic. Water Authority	---	---	P	515	V	Qal/sg
74	4123-7703	Lycoming Valley Dairy	---	---	I	665	V	Dck/---
83	4117-7642	Picture Rocks Spring Water Co.	C. W. Yarrison	1926	P	---	S	---/ss
84	4114-7702	Williamsport Munic. Water Authority	---	---	P	515	V	Qal/sg
89	4115-7643	Hughesville Bor.	---	---	U	585	V	Qal/sg
99	4115-7643	do.	Sprague & Henwood, Inc.	---	P	585	V	Qal/sg
104	4114-7659	Williamsport Milk Prod.	C. W. Yarrison	---	N	530	V	Qal/sg
112	4124-7659	U. S. Geol. Survey	Germania Well Drilling Co.	1967	U	1400	S	Dck/st
113	4121-7721	Pa. Dept. of Forests and Waters	do.	1958	P	720	F	Dck/ss
114	4121-7721	do.	do.	1958	P	760	T	Dck/ss
115	4121-7721	do.	do.	1959	P	760	T	Dck/ss
118	4128-7715	Texas and Blockhouse Fish and Game Club	---	---	H	940	V	Qal/---
120	4113-7647	Muncy Munic. Water Authority	---	1937	P	480	V	Qal/sg
121	4113-7747	do.	---	1937	P	480	V	Qal/sg
122	4113-7647	do.	---	1937	P	480	V	Qal/sg
135	4113-7647	Audio Bible Society	R. R. Hornberger	1967	H	495	V	Sbm/ls
141	4114-7648	Norman Fry	George Turner	1968	H	535	V	Doo/ls
158	4108-7658	T. S. Moore	Norman Hagenbuch	1966	H	580	S	Dh/sh
166	4117-7649	William Bertolet	George Turner	1968	H	1030	S	Dck/sh

(CONTINUED)

Total depth below land surface (feet)	Casing: Depth (feet)	Casing: Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
115	18	6	12;45;78	30	5/79	20	.67	---	---	---	Ek-432
275	---	6	245	235	7/77	20	6.7	---	---	---	433
119	15	6	95	59	7/79	10	---	1	50	7.9	434
160	22	6	85;145	85	6/81	20	0.5	4	250	8.2	435
140	20	6	135	---	---	4	---	6	290	---	436
135	20	6	123	105	10/78	16	3.2	---	---	---	451
85	20	6	24;55;70	31	6/81	32	---	8	228	---	452
110	14	6	85;100	71	6/81	16	3.2	---	695	---	453
95	11	6	23;78	20	6/81	16	.8	---	---	---	454
95	25	6	18;45;75	70	10/78	20	2.0	---	---	---	455
165	36	6	45;85;135; 153	85	10/78	14	.16	---	---	---	456
120	32	8	55;93	51	6/81	20	10	4	180	---	457
85	30	8	35;50;68	50	11/78	20	4	5	175	---	458
125	25	6	55;105	20	10/77	20	.5	1	119	---	459
75	13	6	15;35;60;65	35	8/78	16	---	---	---	---	460
110	31	6	85;95	46	5/80	15	1.0	---	---	---	461
125	21	6	80;115	45	6/81	15	.6	3	101	---	462
55	15	6	27;31;43	10	6/78	16	.76	---	---	---	463
60	10	6	12;40;50	6	6/81	15	5	4	110	---	464
100	21	6	88	---	---	30	---	5	150	---	465
COUNTY											
205	74	8	---	45	10/55	37	15	---	---	---	In- 40
COUNTY											
46	42	6	45	11	6/33	50	8.3	---	---	---	Ly- 2
186	---	8	---	10	---	300	---	---	---	---	7
330	87	8	---	13	9/31	125	2.4	---	---	---	8
48	40	6	---	4	1934	18	---	1	---	---	9
71	71	10	---	10	5/65	150	21.7	1	60	---	12
30	30	---	---	---	---	----	---	1	60	---	13
22	22	---	---	5	1935	400	29	---	---	---	19
302	45	8	300	13	7/35	130	4.5	32	---	---	20
80	28	8	---	7	---	---	---	---	---	---	22
140	32	8	---	7	---	---	---	---	---	---	23
80	30	8	---	7	---	---	---	---	---	---	24
140	34	8	---	7	1935	166	9.8	---	---	---	25
22	22	---	---	7	4/72	800	219	---	220	6.0	26
55	55	28	---	25	---	225	---	---	---	---	29
55	42	30	---	25	---	250	14.5	---	---	---	30
35	---	8	---	10	---	---	---	---	---	---	31
600	70	6	---	6	---	240	---	---	---	---	32
23	23	---	---	---	---	---	---	---	---	---	33
244	50	8	---	22	1932	400	8.0	---	---	---	36
62	62	6	---	10	1929	21	---	6	---	---	38
186	62	6	---	24	---	14	---	7	---	---	39
85	60	6	---	---	---	11	---	9	417	---	47
144	97	6	---	62	---	100	8.3	---	---	---	48
28	28	---	---	8	4/72	350	35	---	---	---	51
30	30	---	---	18	---	350	58.0	---	---	---	66
28	28	---	---	8	4/72	3014	447	---	200	---	68
72	30	6	---	12	7/35	20	3.3	2	---	---	74
296	52	8	---	38	3/26	51	1.2	---	---	---	83
30	30	---	---	8	4/72	500	---	---	---	---	84
96	96	4	---	5	---	200	---	2	---	---	89
48	38	12	---	10	10/75	275	55	2	110	6.0	99
85	75	10	---	35	---	165	9.2	---	---	---	104
200	23	6	125	90	11/71	2	.05	8	320	---	112
109	74	8	---	50	4/58	30	0.73	5	255	---	113
131	56	8	56;120	60	4/58	30	0.89	---	120	---	114
122	71	8	59;122	60	3/79	25	0.80	---	68	---	115
56	---	---	---	38	---	---	---	---	38	---	118
28	22	10	---	10	11/72	180	39	7	320	6.7	120
28	23	8	---	10	11/72	150	37.5	10	380	6.5	121
28	23	8	---	10	11/72	275	32.6	---	---	---	122
215	39	6	73;101;152	50	6/67	20	0.12	---	---	---	135
35	27	6	34	10	6/68	12	---	7	290	6.5	141
273	20	6	---	60	7/66	2	0.01	3	120	7.6	158
134	31	6	100;134	F	9/68	30	---	5	245	7.2	166

TABLE 14.

Well location: Number	Well location: Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ly-176	4114-7652	Bella Vista Village Water Co. Inc.	Harrisburg's Kohl Bros.	1956	P	665	H	DSkt/ls
177	4114-7654	Mountoursville Bor.	Layne-New York Co., Inc.	1953	P	530	V	Qal/sg
178	4115-7655	do.	do.	1957	P	530	V	Qal/sg
179	4116-7655	Lycoming Co.	---	1939	P	545	S	Dbh/st
180	4119-7655	Pa. Game Comm.	Harrisburg's Kohl Bros.	1949	S	615	V	Dck/st
182	4108-7708	H. E. Clark	C. S. Garber & Sons, Inc.	1973	S	940	S	Or/sh
183	4114-7702	Williamsport Munic. Water Authority	---	---	P	515	V	Qal/sg
184	4114-7702	do.	---	---	P	515	V	Qal/sg
185	4114-7702	do.	---	---	P	515	V	Qal/sg
186	4113-7702	Pa. Dept. of Transp.	Harrisburg's Kohl Bros.	1972	U	515	V	Qal/sg
187	4113-7702	do.	do.	1972	U	515	V	Qal/sg
188	4113-7702	do.	do.	1972	U	515	V	Qal/sg
189	4114-7702	do.	do.	1972	U	515	V	Qal/sg
190	4114-7702	do.	do.	1972	U	515	V	Qal/sg
191	4114-7702	do.	do.	1972	U	515	V	Qal/sg
192	4114-7702	do.	do.	1972	U	515	V	Qal/sg
193	4114-7702	do.	do.	1972	U	515	V	Qal/sg
194	4108-7712	Newton Welshans	---	1910	U	710	S	Obf/dol
195	4109-7712	Lycoming Silica Sand Co.	---	---	H	660	W	Obl/ls
196	4112-7657	Pa. Dept. of Environmental Resources	---	---	H	1982	H	Oj/st
197	4107-7713	Samuel Lehman	---	1957	H	795	S	Obl/ls
198	4109-7713	Henry Gordner	C. S. Garber & Sons, Inc.	1973	H	805	S	Obl/ls
199	4108-7712	Jud Hinaman	---	---	U	775	S	Obf/dol
200	4107-7712	O. B. Boyer	C. S. Garber & Sons, Inc.	1973	H	840	S	Ocn/ls
201	4109-7711	N. A. Sayah	Norman Hagenbuch	1967	P	805	H	Obl/ls
202	4109-7713	Lycoming Silica Sand Co.	do.	---	N	665	V	Obl/ls
203	4114-7653	Pa. Power and Light Co.	Germania Well Drilling Co.	1973	N	560	S	DSkt/ls
204	4118-7704	Germania Well Drilling Co.	do.	1963	H	600	V	Dck/sh
205	4114-7654	Sylvania Electric Co., GTE	do.	1972	N	530	V	Qal/sg
206	4114-7654	do.	do.	1972	N	530	V	Qal/sg
209	4110-7707	Immaculate Conception Parish	Andrew E. Trautner	1965	H	1400	S	Or/sh
210	4107-7712	Thomas Hinaman	C. S. Garber & Sons, Inc.	---	H	790	S	Obl/ls
211	4114-7655	Montoursville Bor.	Layne-New York Co., Inc.	1962	P	500	V	Qal/sg
212	4114-7656	do.	do.	1969	P	502	V	Qal/sg
213	4107-7712	William Welahans	C. S. Garber & Sons, Inc.	1973	H	960	S	Or/sh
214	4107-7712	J. D. Bergstrum	do.	1973	H	880	S	Ocn/ls
215	4109-7655	Lycoming Co.	---	1973	U	844	S	Dbh/sh
216	4109-7654	do.	---	1973	U	829	S	Dbh/sh
217	4109-7654	do.	---	1973	U	722	S	Dh/ls
218	4109-7655	do.	---	1973	U	695	S	Dh/ls
219	4113-7702	Corps of Engineers	Layne-New York Co., Inc.	1973	U	510	V	Qal/sg
220	4113-7702	do.	do.	1973	U	510	V	Qal/sg
221	4113-7702	do.	do.	1973	U	510	V	Qal/sg
222	4110-7655	Williamsport Recreational Authority	Harrisburg's Kohl Bros.	1963	C	665	H	Dh/sh
223	4110-7655	do.	do.	1963	I	625	S	Doo/sh
224	4110-7654	Williamsport Area Community Coll.	do.	1970	T	655	W	Dh/sh
225	4110-7654	West Co. Plastics Div.	Germania Well Drilling Co.	1962	N	610	S	Dh/sh
226	4110-7654	do.	do.	1965	N	610	S	Dh/sh
227	4110-7708	Don Sweet	Andrew E. Trautner	1972	H	1015	S	Or/sh
228	4111-7653	Montgomery Water-Sewer Authority	Wieand Brothers	1968	P	495	V	Doo/ss
229	4110-7651	do.	do.	1968	P	515	V	Doo/ss
230	4109-7652	do.	do.	1968	U	490	V	Dtr/sh
231	4111-7651	do.	do.	1968	U	520	V	Doo/ss
232	4110-7651	do.	do.	1968	U	490	V	Dh/sh
233	4113-7647	Muncy Water Co.	Harrisburg's Kohl Bros.	1973	P	480	V	Qal/sg
234	4113-7648	Dr. Shoemaker	do.	1965	U	525	H	Sc/sh
235	4112-7647	Kenneth Bryfogle	do.	1965	U	480	V	Sbm/ls
236	4112-7647	Muncy Water-Sewer Authority	---	---	U	485	V	Sbm/sh
237	4110-7706	E. L. Day	C. S. Garber & Sons, Inc.	1973	H	1590	H	Obe/ss
238	4111-7704	Galen Twigg	do.	1973	H	1405	S	Obe/ss
239	4108-7711	L. G. Ream	Robert L. Brosius	1958	U	805	S	Obl/ls
241	4108-7713	M. E. Stairs	George Turner	1974	H	760	V	Obf/dol
242	4109-7708	Joseph Steinbacher	Andrew E. Trautner	1972	H	960	S	Or/sh
243	4111-7716	West Company	Germania Well Drilling Co.	1968	U	665	V	Dh/sh
244	4119-7654	Pa. Game Comm.	C. W. Yarrison	1933	H	602	V	Dck/sg
245	4110-7657	Maple Hill Community Ctr.	Germania Well Drilling Co.	---	H	635	V	Swc/st
246	4119-7655	Pa. Game Comm.	Harrisburg's Kohl Bros.	1950	H	590	V	Dck/st
247	4118-7655	do.	C. W. Yarrison	1939	H	582	V	Qal/sg
248	4119-7654	do.	Germania Well Drilling Co.	1948	S	603	V	Dck/st

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level Depth below land surface (feet)	Static water level Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
699	142	6	135;500;690	120	1/56	80	0.73	9	---	---	Ly-176
62	52	18	---	33	10/53	350	29	6	---	---	177
43	33	12	---	9	8/57	310	17	3	158	5.5	178
560	28	8	---	20	10/67	100	---	5	240	7.8	179
105	52	6	57	21	7/74	13	0.23	8	420	6.75	180
250	40	6	25;210;235	41	9/73	17	1.3	11	440	7.5	182
30	30	---	---	8	5/72	2004	398	---	280	---	183
28	28	---	---	8	4/72	1302	252	---	240	---	184
32	32	---	---	8	7/42	300	---	---	---	---	185
40	48	6	---	5	4/72	---	---	---	---	---	186
48	48	6	---	7	5/72	---	---	---	---	---	187
46	48	6	---	6	5/72	---	---	---	---	---	188
45	45	6	---	8	4/72	---	---	---	---	---	189
47	45	6	---	8	5/72	---	---	---	---	---	190
46	46	6	---	6	5/72	---	---	---	---	---	191
44	44	6	---	9	5/72	---	---	---	---	---	192
45	45	6	---	7	5/72	---	---	---	---	---	193
85	23	6	25	17	10/73	3	0.04	20	590	---	194
80	---	6	---	30	10/73	6	6.25	28	775	7	195
250	---	6	---	69	10/73	---	---	2	70	5.5	196
168	148	6	---	120	10/73	5	0.66	11	320	6.5	197
300	62	6	---	157	11/73	3	0.1	20	545	7.3	198
105	---	6	---	73	11/73	8	0.27	22	600	7.5	199
425	125	5	191;405	191	5/73	30	0.13	---	---	---	200
205	32	6	---	139	11/73	8	1.36	65	1450	6.5	201
115	---	8	---	25	12/73	59	43.4	11	300	7	202
313	208	6	225;290	45	10/73	66	1.0	9	260	6.8	203
92	60	6	---	20	10/73	5	0.2	9	380	6.5	204
56	56	8	---	28	10/73	---	---	---	---	---	205
56	56	12	---	28	10/73	---	---	---	---	---	206
232	---	6	---	76	10/73	7	0.09	5	200	6.0	209
360	100	6	320;337;345	120	11/73	6	0.25	20	560	7	210
45	35	18	---	11	8/62	510	20	2	---	---	211
50	---	---	---	14	9/69	500	23.5	4	50	6.4	212
220	36	6	122;157;176;212	113	7/73	45	0.26	---	---	---	213
150	42	6	---	38	5/73	10	0.1	---	---	---	214
150	30	6	---	14	8/73	1	.025	---	212	---	215
150	70	6	---	1	8/73	1	0.03	---	221	---	216
150	60	6	---	14	8/73	13	0.41	---	258	---	217
150	50	6	---	5	8/73	20	0.94	---	163	---	218
46	46	12	---	4	3/73	477	232	5	---	5.7	219
45	45	12	---	2	3/73	86	25	5	---	5.7	220
46	46	12	---	3	3/73	525	132	5	---	5.7	221
300	70	8	---	60	8/63	56	0.92	7	215	6.5	222
270	152	8	---	25	9/63	355	6.6	9	250	6.5	223
400	51	8	65;255	17	9/70	54	1.82	7	---	---	224
128	---	6	---	10	3/62	110	5.13	6	190	6.0	225
146	92	8	---	19	1/66	200	16.7	6	200	6.0	226
87	87	6	---	12	3/74	---	---	7	215	6.0	227
205	---	8	---	0	12/68	390	2.78	67	3750	6.5	228
250	---	8	---	---	5/70	350	2.76	6	195	6.0	229
200	46	6	48;71;156	22	3/74	183	8.8	7	---	---	230
90	---	8	---	40	3/74	---	---	---	---	---	231
455	48	8	295	1	3/74	30	---	---	850	---	232
31	15	12	---	7	5/73	150	21.4	---	---	---	233
400	44	8	---	12	6/65	30	0.11	---	---	---	234
200	39	8	63	30	6/65	20	0.12	---	---	---	235
500	20	8	---	10	6/65	140	0.93	---	---	---	236
160	20	6	---	95	9/73	12	0.18	---	---	---	237
120	25	6	---	50	8/73	6	.085	---	---	---	238
144	92	5	130	120	4/74	---	---	---	---	---	239
125	45	6	---	67	4/74	4	---	---	---	---	241
65	40	6	---	0	4/74	8	0.11	10	230	7.0	242
350	86	8	37;350	2	4/68	24	.46	---	---	---	243
80	---	6	---	13	7/74	10	1	5	180	6.0	244
40	---	6	---	2	7/74	---	---	6	150	6.25	245
105	---	6	---	11	7/74	10	11.8	5	190	5.75	246
40	---	6	---	11	10/75	8	12.5	5	190	5.75	247
86	---	8	---	9	10/75	17	0.45	5	210	6.75	248

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Ly-249	4115-7643	Hughesville Bor.	Layne-New York Co., Inc.	1972	P	585	V	Qal/sg
250	4107-7701	U. S. Geol. Survey	Germania Well Drilling Co.	1974	U	560	W	DSkt/ls
251	4109-7701	John Pryor	do.	1974	H	820	S	Sc/sh
252	4114-7700	Lycoming Co. Govt.	do.	1969	Z	525	V	Doo/ls
253	4116-7702	Williamsport Area Sch. Dist.	do.	1973	Z	635	S	Dck/ss
254	4116-7702	do.	do.	1973	T	635	S	Dck/ss
255	4114-7659	Syntex Fabrics Inc.	do.	1974	N	535	V	Doo/sh
256	4114-7654	Williamsport New Crete Co.	do.	1972	N	520	V	Qal/sg
257	4113-7710	Harvest Moon Trailer Ct.	do.	1972	C	580	S	Dh/sh
258	4117-7703	Stroehmann 8akery	do.	1963	N	570	V	Dck/st
259	4117-7703	First Hartford Realty Corp.	do.	1973	U	565	V	Dck/st
260	4117-7703	do.	do.	1973	C	565	V	Qal/sg
261	4120-7656	Carl Henry	---	---	H	860	S	Dck/st
262	4124-7653	Robert Blair	C. S. Garber & Sons, Inc.	1974	H	865	V	Dck/st
263	4110-7713	Donald Cameron	do.	1975	U	570	V	Sc/sh
264	4107-7712	Thomas Hinaman	do.	1974	H	790	S	Obl/ls
265	4109-7708	Rose Stopper	do.	1975	H	900	S	Ocn/ls
266	4109-7656	Fed. 8ur. of Prisons	---	1943	P	610	S	Dh/sh
267	4109-7755	do.	---	---	U	660	S	Dh/sh
268	4112-7643	Gordan Hill	Gordon E. Hill	1972	H	560	S	Dh/ls
269	4110-7652	Montgomery Mills Inc.	---	---	U	505	V	Dh/sh
270	4110-7650	Grumman Allied Ind.	Wieand 8rothers	1972	Z	510	V	Dh/sh
271	4110-7650	do.	do.	1972	U	510	V	Dh/sh
272	4112-7655	Pa. Dept. of Transp.	E. W. Artley	1947	P	2000	H	Oj/st
273	4111-7649	Koppers Co. Inc.	Wieand Brothers	1971	F	505	V	DSkt/ls
274	4111-7649	do.	do.	1971	U	505	V	Doo/ss
275	4111-7649	do.	do.	1971	H	505	V	Doo/sh
276	4111-7649	do.	do.	1971	H	505	V	Doo/ss
277	4111-7649	do.	William Cresswell	1972	U	505	V	Doo/ss
278	4111-7649	do.	do.	1972	N	505	V	Doo/ss
280	4114-7655	Carey McFall Co.	---	---	N	535	V	DSkt/ls
281	4110-7651	do.	Wieand Brothers	1971	Z	510	V	Dh/sh
282	4111-7649	Construction Specialties Inc.	Germania Well Drilling Co.	1968	N	530	S	Sbm/sh
283	4112-7646	Bryfogle Nurseries	do.	---	1	518	V	DSkt/ls
284	4112-7646	Bryfogle's Inc.	do.	1968	1	520	V	DSkt/ls
285	4112-7646	8ryfogle Nurseries	do.	1973	I	500	V	DSkt/ls
286	4112-7646	do.	do.	1972	U	525	V	DSkt/ls
287	4114-7650	GTE Sylvania	Sprague & Henwood, Inc.	1958	N	540	S	DSkt/ls
288	4114-7650	do.	Layne-New York Co., Inc.	1966	N	540	S	DSkt/ls
289	4114-7653	Pa. Power and Light Co.	---	1970	N	560	W	DSkt/ls
290	4114-7653	do.	---	---	U	560	S	DSkt/ls
291	4114-7651	Eck's Garage	Germania Well Drilling Co.	1973	C	660	S	Dh/sh
292	4114-7653	Lycoming Silica Sand Co.	Merle C. Wishard	1960	H	525	V	Sbm/sh
293	4113-7645	do.	---	---	H	550	V	DSkt/ls
294	4113-7645	H. W. Fry	---	---	U	530	V	DSkt/ls
295	4115-7656	Williamsport Country Club	Germania Well Drilling Co.	1968	H	610	S	Dh/sh
296	4115-7656	do.	C. W. Yarrison	1958	H	585	S	Dh/sh
297	4115-7656	do.	do.	1956	I	560	S	Doo/ss
298	4114-7657	do.	---	---	U	575	S	Doo/ls
299	4115-7656	do.	---	---	U	595	S	Dh/sh
300	4115-7643	Hughesville Bor.	George Turner	1957	U	590	V	Dbh/sh
301	4113-7647	Muncy 8or. Water Authority	Harrisburg's Kohl 8ros.	1975	S	480	V	Qal/sg
302	4112-7647	Sprout Waldron Co.	George Turner	1960	N	505	V	Swc/sh
303	4112-7647	Sprout Waldron and Co.	do.	1972	N	500	V	Swc/sh
304	4112-7647	do.	do.	1971	N	505	V	Swc/sh
306	4114-7644	Robert Geedes	Gordon E. Hill	1973	H	570	V	Dh/sh
307	4113-7642	Lynn Lunger	do.	1971	H	595	V	Dh/ls
308	4113-7644	Food Rite	do.	1971	H	550	V	Dh/sh
309	4112-7643	Marshall Hull	do.	1971	C	545	V	Dh/sh
310	4112-7643	do.	do.	1972	P	550	V	Dh/sh
311	4112-7644	Ivan Kepner	do.	1972	H	515	V	Dh/sh
312	4112-7643	Raymond Clayton	do.	1969	H	615	S	Qal/sg
314	4114-7645	Charles Lowe	do.	1974	H	600	S	Doo/ss
315	4114-7646	Harry Richart	do.	1972	H	610	S	Doo/ss
316	4113-7646	Charles Lowe	do.	1971	H	535	V	Qal/sg
317	4114-7646	Leonard Klees	do.	1973	H	580	H	DSkt/ls
318	4111-7646	Grace 8aptist Ch.	do.	1974	H	560	S	Doo/ss
320	4114-7649	Lycoming Mall	Harrisburg's Kohl 8ros.	1976	U	535	S	DSkt/ls
321	4114-7703	Eastern Scrap Co.	C. S. Garber & Sons, Inc.	1974	C	535	V	Dh/sh
322	4110-7706	Terry Gamble	do.	1975	H	1590	H	Obe/ss
334	4109-7710	Limestone Twp.	do.	1976	H	835	S	Obl/ls
336	4107-7712	Donald Delaney	do.	1973	H	840	S	Ocn/ls
353	4110-7706	Richard Ranich	do.	1975	H	1565	S	Obe/ss
374	4120-7655	O. A. 8ruder	New Way Drilling Inc.	1976	H	620	V	Qal/sg
386	4118-7646	Walter 8axter	Merle C. Wishard	1971	H	1090	S	Dck/sh
410	4118-7705	Robert Smith	New Way Drilling Inc.	1976	H	995	S	Dck/sh
420	4113-7713	Dad's	C. S. Garber & Sons, Inc.	1974	C	565	V	Dbh/sh
443	4117-7713	H. L. Barton	Germania Well Drilling Co.	1964	H	780	S	Dck/st

(CONTINUED)

Total depth below land surface (feet)	Casing: Depth (feet)	Casing: Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
49	39	16	---	10	10/72	450	39	2	105	6.0	Ly-249
409	168	6	---	16	9/74	21	3.55	15	500	7.25	250
100	50	6	---	F	3/75	10	0.14	4	140	7.0	251
126	110	8	---	24	7/69	220	23	9	430	7.0	252
400	33	8	---	100	8/73	34	0.37	2	280	7.3	253
400	23	8	---	100	8/73	29	0.29	2	280	7.3	254
136	57	8	---	---	---	35	---	---	---	---	255
53	53	8	---	32	6/72	60	---	---	---	---	256
188	23	10	---	20	10/72	128	2.57	---	---	---	257
124	61	8	---	14	6/63	200	7.41	7	450	7.2	258
185	70	6	---	10	3/73	41	---	---	---	---	259
40	40	10	---	9	3/73	200	61	5	295	6	260
110	---	6	---	---	---	---	---	2	60	5.0	261
183	24	6	40;120	3	4/75	5	0.20	---	8500	---	262
127	26	6	115	3	7/75	5	0.18	13	4100	8.10	263
360	40	6	---	118	7/75	20	0.23	27	700	8	264
320	235	6	280;314	210	4/75	3	0.03	---	---	---	265
300	---	8	---	+3	7/75	200	29	6	210	7.5	266
300	---	8	---	26	7/75	17	0.56	5	220	7.0	267
150	50	6	---	35	9/72	---	---	6	275	7.1	268
400	---	6	---	5	8/75	42	0.44	---	---	---	269
327	52	6	55;70;90	18	8/75	17	0.51	2	220	7.0	270
302	50	6	52;100;150	18	8/75	11	0.22	---	400	---	271
57	50	6	---	31	8/75	---	---	4	775	6.0	272
325	53	6	---	25	3/71	177	3.52	21	1050	7.5	273
109	41	8	---	20	8/75	19	1.62	7	260	7.25	274
103	41	6	---	25	7/71	20	---	10	400	7.0	275
90	41	8	---	18	8/75	150	---	7	270	7.5	276
63	40	8	---	20	8/75	2	0.08	7	265	7.5	277
141	44	8	---	12	5/72	128	8.15	8	245	7.25	278
200	---	8	---	53	8/75	70	2.8	12	500	7.5	280
203	29	6	---	9	8/75	100	3.7	5	230	7.0	281
250	43	8	---	25	4/68	100	1.78	4	175	6.5	282
100	---	---	---	---	---	120	---	25	---	---	283
111	92	8	---	15	11/73	60	---	16	640	7.5	284
75	79	8	---	8	9/75	---	---	19	850	7.5	285
102	58	10	---	26	9/75	22	5.79	6	220	7.5	286
215	66	10	---	45	6/74	244	14.4	34	1100	7.75	287
212	60	10	---	55	6/74	265	14.3	44	1650	8.0	288
358	---	---	---	45	9/75	---	---	9	330	7.0	289
75	---	6	---	45	9/75	---	---	---	250	---	290
200	---	6	---	45	10/75	21	---	5	195	6.5	291
55	---	6	---	26	10/75	8	0.38	10	460	6.8	292
120	---	6	---	57	10/75	12	0.88	8	320	7.0	293
52	---	6	---	35	10/75	8	1.16	11	340	7	294
80	50	6	---	---	---	---	---	4	140	6.70	295
80	---	6	---	---	---	---	---	3	120	6.2	296
286	50	8	---	46	3/77	240	9.0	5	165	7.0	297
100	---	8	---	64	10/75	3	0.13	9	340	7	298
65	---	6	---	8	10/75	22	2.2	2	80	6.2	299
148	70	8	---	14	10/75	22	4.62	5	380	7.0	300
38	21	12	---	12	9/76	350	52.7	---	---	---	301
135	40	---	60	---	---	60	---	32	1080	7.4	302
175	31	---	60;175	---	---	45	---	---	---	---	303
145	40	---	---	---	---	50	---	---	---	---	304
57	57	6	---	---	---	24	---	---	---	---	306
50	27	6	---	12	12/71	36	9.0	---	---	---	307
92	58	6	---	10	4/71	15	0.25	---	---	---	308
128	84	6	95;118	14	8/71	24	0.43	---	---	---	309
200	92	6	125;185	15	10/72	12	0.01	---	---	---	310
90	29	6	63;84	7	8/72	12	0.18	---	---	---	311
100	100	6	---	70	5/69	24	2.4	---	---	---	312
105	74	6	---	50	---	---	---	---	---	---	314
82	42	6	---	52	1/72	20	2.86	---	---	---	315
79	79	6	---	40	6/71	24	2.0	---	---	---	316
170	74	6	---	55	11/73	---	---	---	---	---	317
50	24	6	---	22	4/74	24	---	---	---	---	318
150	50	6	65;135	30	10/76	200	200	---	---	---	320
160	46	6	---	13	7/74	20	0.31	---	---	---	321
100	20	6	80;90	55	5/75	20	0.50	1	55	6.5	322
230	172	6	230	170	5/76	60	1.00	---	---	---	334
248	80	6	180;225	160	4/73	5	0.06	---	---	---	336
180	24	6	86;173	100	6/75	5	0.06	---	---	---	353
80	80	6	---	23	11/76	30	0.53	3	140	5.0	374
155	48	6	105;150	30	4/71	6	---	3	160	6.3	386
260	28	6	70;170	77	5/77	2	0.01	3	100	6.4	410
160	33	6	40;148;152	40	11/74	30	0.25	18	750	7.5	420
165	---	6	---	---	---	100	---	4	220	7.4	443

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ly-448	4116-7655	Lycoming County Home	C. W. Yarrison	1936	U	625	S	Dbh/st
453	4111-7654	Deluxe Motel and Restaurant	---	---	P	705	S	Sbm/sh
454	4112-7702	Steven Conner	Germania Well Drilling Co.	1970	H	690	V	Or/sh
455	4112-7702	Ray McCarroll	do.	1966	H	675	V	Or/sh
456	4108-7701	Russell Budman	George Turner	1964	H	630	S	Swc/st
457	4108-7701	Charles Ulrich	Robert H. Zimmerman	1954	H	644	S	Sbm/sh
458	4118-7705	Bill McQuown	Andrew E. Trautner	1976	H	995	S	Dck/sh
459	4118-7705	Sharron Featherstone	do.	1977	H	940	S	Dck/sh
460	4118-7706	Ernest Kinley	do.	1975	H	960	S	Dck/sh
461	4119-7701	Richard Sechrist	do.	1976	H	900	S	Dck/sh
462	4119-7701	Patricia Knight	do.	1976	H	960	S	Dck/sh
463	4119-7649	Ray Dincher	Max A. Lundy	1973	H	1025	S	Dck/sh
464	4118-7649	Terry Dincher	do.	1970	H	965	S	Dck/sh
465	4118-7649	Susan Eldred	do.	1976	H	1160	S	Dck/sh
466	4118-7648	Earl Hall	George Turner	1961	H	1055	S	Dck/sh
467	4116-7709	Raymond Jackson	Andrew E. Trautner	1957	H	790	V	Dck/sh
468	4117-7710	Dodge	do.	1965	H	970	S	Dck/sh
469	4117-7710	Floyd Koch	Germania Well Drilling Co.	1975	H	950	S	Dck/sh
470	4117-7707	Larry Hostrander	do.	1976	H	1000	H	Dck/sh
471	4117-7709	J. A. Ertel	do.	1965	H	845	V	Dck/st
472	4117-7710	Bernard Bower	Andrew E. Trautner	1970	Z	1220	S	Dck/sh
473	4118-7708	H. J. Gunther	do.	1965	H	960	V	Dck/st
474	4119-7708	Dan Stabler	do.	1973	H	850	V	Dck/sh
475	4114-7652	Twin Hills Village	---	---	P	620	S	DSkt/---
476	4130-7657	Ralston Water and Power Co.	---	---	P	880	V	Dck/---
477	4123-7702	R. Schrist	New Way Drilling Inc.	1979	H	720	V	Dck/sg
478	4123-7702	D. Adams	do.	1979	H	700	V	Dck/sh
479	4123-7700	R. Ulmer	do.	1977	H	1280	H	Dck/sh
480	4125-7700	F. S. Dietrick	do.	1979	H	820	S	Dck/sh
481	4128-7658	Lester Wilson	Willard S. Kuser	1978	H	800	V	Dck/sg
482	4122-7703	K. Ringler	New Way Drilling Inc.	1980	H	690	S	Dck/---
483	4111-7715	William Baker	do.	1978	H	560	S	Dh/ss
484	4111-7715	D. Leonard	do.	1979	H	560	S	Dh/ss
485	4111-7715	R. Pagnotto	do.	1980	H	530	S	Dh/ss
486	4111-7716	K. Terry	do.	1979	H	590	S	DSkm/sh
487	4112-7717	R. Thomas	do.	1979	H	830	S	Dlh/---
488	4113-7717	J. Koch	do.	1979	H	840	S	Dlh/sh
489	4111-7717	R. Mardins Inc.	do.	1978	H	540	S	Dh/sh
490	4111-7717	Rod Chambers	do.	1978	H	520	S	Dh/sh
491	4119-7728	T. Stwert	do.	1978	H	1780	H	Mmc/ss
492	4119-7728	I. Stolzfus	do.	1979	H	1780	H	Mmc/ss
493	4119-7728	Nolt	do.	1980	H	1780	S	Mmc/ss
494	4122-7732	J. Lehman	John P. Timmerman	1980	H	1840	H	Mb/ss
495	4128-7730	C. Coolidge	New Way Drilling Inc.	1977	H	760	V	Dck/---
496	4128-7730	A. Simmer	do.	1979	H	780	V	Dck/ss
497	4128-7735	H. Souders	do.	---	H	980	S	Dck/ss
498	4114-7715	D. Boatman	do.	1979	H	1200	S	Dlh/sh
499	4114-7715	K. Boatman	do.	1979	H	1140	S	Dlh/sh
500	4129-7729	E. Rickard	Frank Copenhaver	1978	H	780	V	Dck/sh
501	4114-7710	D. Pailhamus	New Way Drilling Inc.	1980	H	840	S	Dck/sh
502	4113-7709	J. Shirey	do.	1979	H	645	S	Dbh/sh
503	4113-7709	do.	do.	1978	H	635	S	Dbh/sh
504	4111-7714	Kramer	do.	1978	H	605	S	Dh/sh
505	4110-7713	F. Raymer	Frank Copenhaver	1978	H	865	S	Sc/sh
506	4110-7713	H. Williams	Andrew E. Trautner	1980	H	620	S	Dbe/---
507	4122-7732	John Cooper	Wayne C. Murray	1972	H	1940	H	Mb/sh
508	4119-7646	J. Laycock	New Way Drilling Inc.	1978	H	1335	S	Dck/---
509	4115-7646	McCoy Bros.	Gordon E. Hill	1979	H	600	S	Dh/sh
510	4115-7648	C. Glieewell	Richard L. Marsh	1978	H	890	H	Dlh/---
511	4116-7648	M. Bayley	do.	1978	H	950	H	Dlh/sh
512	4116-7650	N. Eckley	New Way Drilling Inc.	1978	H	840	S	Dbh/sh
513	4115-7651	S. Barns	do.	1979	H	690	S	Dh/sh
514	4116-7651	L. Polk	do.	1978	H	920	S	Dbh/sh
515	4116-7651	J. Hamilton	do.	1978	H	940	H	Dbh/sh
516	4119-7650	E. Fegley	Richard Lee Jones	1980	H	1020	H	Dck/---
517	4119-7650	do.	New Way Drilling Inc.	1980	H	1020	H	Dck/sh
518	4119-7650	do.	do.	1980	H	920	V	Dck/ss
519	4119-7649	M. Rowles	Gordon E. Hill	1978	H	1040	S	Dck/sh
520	4118-7649	D. Jordon	New Way Drilling Inc.	1979	H	1015	S	Dck/ss
521	4118-7645	Collins	Richard L. Marsh	1978	H	1130	S	Dck/sh
522	4116-7642	D. Hilner	do.	1978	H	650	V	Qal/sg
523	4117-7642	D. Bartlow	do.	1980	H	700	V	Qal/sg
524	4116-7643	H. Andrews	do.	1981	H	760	S	Dlh/---
525	4115-7644	R. Hilbert	do.	1978	H	750	S	Dlh/sh
526	4106-7704	R. Eck	New Way Drilling Inc.	1978	H	680	V	Sbm/sh
527	4106-7705	D. Patterson	do.	1977	H	770	V	Sbm/sh
528	4114-7641	Haven Homes Inc.	do.	1980	H	640	S	Dtr/sh
529	4113-7641	R. Michael	Richard L. Marsh	1980	H	1040	H	Dtr/sh
530	4113-7642	R. Magargle	Gordon E. Hill	1978	H	680	S	Dtr/sh
531	4113-7642	L. Magargle	do.	1978	H	700	S	Dtr/sh
532	4114-7639	D. McCormick	Richard L. Marsh	1980	H	1160	S	Dtr/sh
533	4114-7644	H. Saanner	Gordon E. Hill	1978	H	580	V	Dh/---
534	4113-7645	J. Neidig	New Way Drilling Inc.	1980	H	540	V	Doo/ls

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
295	32	8	---	60	---	12	0.24	---	---	---	Ly-448
96	---	6	---	---	---	---	---	4	140	7.0	453
70	---	5	---	2	5/77	25	---	1	380	7.2	454
57	37	6	48	3	5/76	22	---	9	280	7.2	455
135	40	6	---	55	6/73	21	---	7	245	6.95	456
110	20	8	105	21	4/74	40	---	6	250	6.9	457
200	19	6	---	46	5/77	10	---	3	50	6.25	458
115	---	8	---	---	---	8	---	2	55	6.1	459
175	25	8	---	90	5/77	32	---	6	240	6.7	460
148	22	6	---	78	5/77	7	---	5	150	7.05	461
190	110	6	165	29	5/77	10	---	4	140	6.9	462
125	100	6	---	65	5/75	---	---	2	100	6.4	463
65	25	6	---	35	4/72	5	---	2	90	6.2	464
400	40	6	---	126	5/77	10	---	1	180	8.1	465
235	25	8	---	---	---	10	---	4	160	6.7	466
85	---	8	---	3	---	---	---	4	245	6.9	467
250	---	8	---	50	5/77	---	---	---	---	---	468
109	25	6	---	8	---	25	---	5	190	6.9	469
300	20	6	---	59	7/76	3	---	6	325	7.0	470
78	12	8	15;74	5	8/65	30	3	6	325	6.95	471
430	15	6	---	10	5/77	---	---	1	520	9.25	472
110	30	6	---	---	---	11	---	5	200	6.6	473
60	30	5	---	15	5/76	3	---	6	305	7.2	474
318	90	6	---	130	12/66	43	.48	---	---	---	475
95	92	5	---	---	---	15	---	---	---	---	476
40	30	6	10	10	10/79	60	2.0	3	156	---	477
80	47	6	49;69	30	4/79	10	0.2	---	---	---	478
120	39	6	---	50	4/81	12	.18	2	85	8.0	479
160	48	6	148	98	9/79	6	.09	---	---	---	480
57	57	6	---	15	1/78	20	---	---	---	---	481
200	65	6	80	20	9/80	2	.01	---	---	---	482
200	61	6	94	50	6/81	3	.04	9	380	8.0	483
160	41	6	133;151	53	6/81	60	0.6	8	340	8.0	484
120	56	6	97	84	12/80	8	.22	5	345	---	485
120	28	6	40;116	14	6/81	60	.67	---	320	---	486
500	27	6	240	59	6/81	1	---	4	160	---	487
80	21	6	34;56	30	6/79	20	0.4	---	---	---	488
80	22	6	31;55	40	4/78	20	0.5	7	390	---	489
200	43	6	135;192	80	4/78	12	0.1	---	---	---	490
260	67	6	---	30	3/78	.5	---	---	---	---	491
220	21	6	40;85	20	9/79	3	.02	---	---	---	492
200	42	6	188;190	140	6/80	4	.06	---	---	---	493
122	20	6	40;70	27	6/81	5	.05	1	50	---	494
91	25	6	71	17	6/81	8	.11	1	65	---	495
120	20	6	90	45	9/79	10	.13	---	---	---	496
180	66	6	160	150	11/77	6	0.2	---	---	---	497
200	40	6	174	80	2/79	5	.04	5	260	---	498
260	40	6	238	80	2/79	10	.05	5	275	---	499
55	31	6	44;52	20	5/78	14	.64	---	---	---	500
150	42	6	58;130;147	37	6/81	10	.14	5	140	---	501
200	26	6	85;119;189	80	3/79	3	.02	8	260	7.5	502
260	21	6	---	78	6/81	1	---	2	500	---	503
300	48	6	110	48	6/81	1	---	6	250	7.0	504
195	130	6	178;192	148	6/81	7	.13	8	260	---	505
152	26	6	82;152	33	6/81	10	.10	6	460	6.8	506
100	7	6	30;90	35	6/81	7	---	---	---	---	507
200	44	6	100	80	5/78	2	.02	---	---	---	508
200	59	6	128	---	---	4	---	---	---	---	509
500	30	6	250	---	---	1	---	4	130	7.8	510
152	27	6	100	---	---	3	---	---	---	---	511
200	31	6	140	70	6/78	4	.03	---	---	---	512
140	64	6	105;132	70	7/79	60	.86	---	---	---	513
300	38	6	276	210	6/78	3	.03	---	---	---	514
340	21	6	287	145	9/78	60	.31	---	---	---	515
595	10	6	173	134	8/81	1	---	---	---	---	516
350	0	6	---	0	10/80	---	---	---	---	---	517
100	18	6	18;20	4	12/80	8	.08	4	190	6.7	518
225	52	6	178	83	8/81	4	---	2	60	6.5	519
320	41	6	---	69	5/79	1	.01	3	160	7.1	520
155	33	6	140	---	---	10	---	4	175	7.6	521
44	42	6	---	---	---	15	---	3	200	6.4	522
52	51	6	---	---	---	30	---	---	---	---	523
315	15	6	215	---	---	1	---	---	---	---	524
440	26	6	200	---	---	1	---	---	---	---	525
80	23	6	40	10	8/81	15	---	---	---	---	526
100	43	6	70	60	10/77	10	.25	---	---	---	527
400	40	6	140;387	25	8/81	4	.01	2	170	---	528
600	21	6	260	---	---	.5	---	4	195	---	529
150	43	6	68	33	10/78	5	---	---	---	---	530
360	42	6	117;351	---	---	5	---	---	---	---	531
315	29	6	135;310	83	8/81	15	---	3	205	---	532
55	55	6	55	---	---	15	---	---	---	---	533
100	40	6	98	10	11/80	60	.67	---	---	---	534

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Ly-535	4113-7643	D. Spring	Richard L. Marsh	1979	H	590	S	Dh/sh
536	4112-7643	L. Vandine	do.	1979	H	580	V	Dh/sh
537	4111-7645	W. Tobias	Gordon E. Hill	1979	H	580	V	Dh/sh
538	4112-7644	M. Clementoni	do.	1979	H	530	V	Dh/sh
539	4112-7644	B. Clark	do.	1978	H	540	V	Dh/sh
540	4112-7644	W. J. Derick	do.	1977	H	540	V	Dh/sh
541	4113-7634	R. Brinkman	New Way Drilling Inc.	1980	H	1160	S	Dtr/sh
545	4114-7651	J. McGee	do.	1978	H	600	V	DSkt/sh
546	4114-7651	D. Shabeen	do.	1977	H	600	S	DSkt/sh
547	4114-7651	R. Woods	do.	1978	H	610	S	DSkt/sh
548	4113-7646	Cashman	Gordon E. Hill	1978	H	540	V	DSkt/sh
549	4113-7646	J. Rodarmel	do.	1978	H	540	V	DSkt/sh
550	4113-7646	R. Bigger	Richard L. Marsh	1980	H	560	V	DSkt/ls
551	4131-7719	W. Staltzfus	New Way Drilling Inc.	1978	H	1600	V	Dck/ss
552	4124-7716	Ault	do.	1979	H	1570	S	Dck/sh
553	4124-7715	D. Krempasky	do.	1978	H	1500	S	Dck/ss
554	4123-7720	C. Stansfield	do.	1978	H	810	V	Dck/---
555	4120-7721	James Hollister	Frank Copenhaver	1976	H	760	S	Dck/sh
556	4120-7721	Bruce Samole	do.	1977	H	690	V	Dck/ss
557	4120-7721	Josiah Eby	do.	---	H	705	S	Dck/---
558	4118-7721	W. Falk	do.	1977	H	615	V	Dck/---
559	4118-7721	N. Danneker	do.	1977	H	610	V	Dck/---
560	4115-7719	W. Richey	do.	1978	H	590	V	Dck/sh
561	4115-7719	Kim Davis	do.	1978	H	615	S	Dck/sh
562	4116-7719	C. Marzzacco	New Way Drilling Inc.	1980	H	595	V	Dck/ss
563	4117-7719	R. Eisley	Frank Copenhaver	1978	H	840	S	Dck/sh
564	4115-7719	Philip Stacone	do.	1977	H	615	S	Dck/sh
565	4115-7719	J. Aerritt	do.	1978	H	610	V	Dck/sh
566	4115-7719	R. A. Myers	do.	1980	H	620	S	Dck/sh
567	4115-7719	Douglas Gottschall	do.	1980	H	635	S	Dck/sh
568	4116-7717	R. Ulmer	New Way Drilling Inc.	1980	H	1070	S	Dck/---
569	4116-7717	Carol Sulik	Frank Copenhaver	---	H	1140	S	Dck/sh
570	4116-7717	D. Y. Kin	do.	---	H	1150	S	Dck/sh
571	4121-7730	Little Pine St. Pk.	---	1974	P	780	S	Dck/ss
572	4121-7721	Pa. Dept. of Forests and Waters	---	1968	P	690	V	Dck/---
573	4121-7721	do.	Germania Well Drilling Co.	1968	P	795	V	Dck/---
574	4113-7702	Williamsport Munic. Water Authority	Moody & Assoc.	1981	P	520	V	Qal/---
575	4113-7702	do.	do.	1981	P	520	V	Qal/---
576	4118-7711	Short Mt. Spring Water	New Way Drilling Inc.	1980	P	845	S	Dck/---
577	4118-7711	do.	Germania Well Drilling Co.	1980	P	850	S	Dck/---
578	4118-7710	P. Reber	New Way Drilling Inc.	1979	H	950	S	Dck/---
579	4119-7709	A. Paulhamus	do.	1981	H	1100	S	Dck/---
580	4131-7705	Beech Ridge Hunt Club	do.	1981	H	1730	S	Dck/---
581	4125-7711	D. Shanp	do.	1979	H	1525	S	Dck/---
582	4125-7712	L. Landon	Robert C. Weaver	1980	H	1565	S	Dck/---
583	4124-7713	S. McGaskin	New Way Drilling Inc.	1980	H	1570	S	Dck/---
584	4115-7709	J. Hill	do.	1978	H	930	S	Dck/---
585	4115-7710	T. Strouse	do.	1977	H	920	S	Dck/---
586	4117-7711	H. Bierman	do.	1980	H	870	S	Dck/---
587	4117-7711	T. Miller	do.	1979	H	890	S	Dck/---
588	4116-7714	C. Eck	do.	1979	H	690	V	Dck/---
589	4118-7710	G. Mayers	do.	1980	H	1230	H	Dck/---
590	4117-7708	Allen Person	do.	1977	H	1060	H	Dck/---
591	4116-7708	H. Larson	do.	1980	H	1010	H	Dck/---
592	4116-7705	D. Dunkleberger	Andrew E. Trautner	1980	H	960	S	Dlh/---
593	4116-7705	H. Larson	New Way Drilling Inc.	1979	H	940	S	Dlh/---
594	4115-7706	C. M. Snyder	do.	1978	H	960	S	Dlh/---
595	4115-7701	Jehovah's Witness	do.	1979	P	755	S	Dtr/---
596	4119-7703	T. Belles	do.	1980	H	1150	H	Dlh/---
597	4119-7705	W. Harrison	do.	1978	H	710	S	Dlh/---
598	4119-7706	Richard Ulmer	Andrew E. Trautner	1980	H	655	V	Dlh/---
599	4120-7703	D. Loudenslager	Gordon E. Hill	1978	H	900	S	Dck/---
600	4117-7701	Harold Brown	New Way Drilling Inc.	1978	H	1060	H	Dlh/---
601	4114-7629	D. Hall	Stackhouse & Son Inc.	1979	H	1340	S	Dck/---
602	4114-7647	F. Metzger	Gordon E. Hill	1979	H	530	V	Doo/ls
603	4115-7647	W. Rall	do.	1981	H	640	H	Dh/sh
604	4111-7650	F. Zarr	do.	1978	H	630	V	Sbm/---
605	4109-7700	S. Litcher	New Way Drilling Inc.	1979	H	660	V	Sbm/sh
606	4108-7700	R. Bodine	Gordon E. Hill	1978	H	660	V	DSkt/sh
607	4108-7703	H. Erdman	New Way Drilling Inc.	1980	H	850	S	Sc/---
608	4109-7705	S. Steppe	do.	1980	H	1580	S	Dbe/ss
609	4109-7705	J. Steppe	do.	1980	H	1510	S	Dbe/ss
610	4110-7706	D. Sullivan	do.	1980	H	1620	S	Dbe/ss
611	4110-7706	M. Gahrig	do.	1979	H	1560	S	Dbe/ss
612	4111-7705	J. McDermitt	do.	1980	H	1640	S	Dbe/ss
613	4111-7705	L. Bush	do.	1978	H	1650	S	Dbe/ss
614	4111-7704	Webster	do.	1980	H	1280	S	Dbe/ss
615	4112-7702	G. Ferguson	do.	1980	H	840	S	Dr/sh
616	4113-7706	T. Steppe	do.	1981	H	580	V	DSkt/sh
617	4112-7705	R. Steinbocker	do.	1980	H	560	S	Sbm/sh

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
175	117	6	155	---	---	5	---	---	---	---	Ly-535
195	109	6	150;175	---	---	5	---	---	---	---	536
300	40	6	290	26	8/81	5	---	3	170	---	537
275	43	6	141;249	23	---	3	---	---	---	---	538
200	43	6	76;181	25	8/81	2	---	---	---	---	539
98	41	6	72	8	9/77	20	---	---	---	---	540
260	44	6	92;138;240	40	8/81	10	.05	3	230	---	541
180	84	6	120	100	8/78	4	.05	---	---	---	545
180	128	6	98	60	8/81	6	---	---	---	---	546
160	62	6	100	45	8/81	10	.12	---	---	---	547
110	96	6	104	---	---	75	---	---	---	---	548
120	87	6	116	---	---	40	---	---	---	---	549
94	84	6	85	41	8/81	10	---	---	---	---	550
140	35	6	---	60	11/79	5	.06	---	---	---	551
300	50	6	283	180	7/79	20	.16	---	---	---	552
200	21	6	131;156;197	112	8/81	4	.05	1	50	---	553
100	39	6	65;75	32	4/78	4	.07	---	---	---	554
86	54	---	76;83	45	1/76	5	.13	---	---	---	555
31	20	6	28	8	9/77	45	6.4	---	---	---	556
55	9	6	45;52	25	---	5	.25	---	---	---	557
19	19	6	---	7	11/77	32	6.4	---	---	---	558
19	19	6	19	7	11/77	15	3.7	---	---	---	559
75	33	6	48;56;72	12	8/81	9	.18	5	155	---	560
170	14	6	85;104;166	82	8/81	6.6	.09	6	310	---	561
80	31	6	55	10	7/80	12	.17	---	---	---	562
---	46	6	56;95;175	120	7/78	16	.23	---	---	---	563
100	14	6	---	48	8/77	8	.18	---	---	---	564
64	59	6	61	42	7/78	6	.6	---	---	---	565
115	21	6	90;112	50	8/81	---	---	3	100	---	566
150	14	6	72;142	45	8/80	6	.06	---	---	---	567
260	27	6	90	73	10/80	2	.01	4	240	---	568
225	16	6	205;220	155	---	3	.04	---	---	---	569
130	10	6	60;121	43	8/81	2	.02	---	105	---	570
404	67	---	55	65	5/74	28	.12	---	---	---	571
55	34	6	---	8	10/68	9	.40	---	---	---	572
100	62	6	---	39	10/68	20	.4	---	---	---	573
40	35	12	---	---	---	500	167	---	---	---	574
41	34	12	---	---	---	500	100	---	---	---	575
250	65	6	120	33	8/81	100	.67	---	---	---	576
149	65	6	---	---	---	---	---	54	---	6.5	577
340	21	6	148	71	8/81	1	.01	3	120	---	578
200	42	6	88;173	45	8/81	4	.04	2	82	---	579
200	21	6	100	66	8/81	1	.01	6	195	8.2	580
140	22	6	---	100	7/79	25	.62	4	160	---	581
132	23	6	128	52	1/80	6	.08	---	---	---	582
280	18	6	95;184;257	83	1/80	2	.01	7	280	---	583
340	26	6	225	106	8/78	1	.01	---	---	---	584
300	22	6	100;125	64	8/81	1	.01	5	190	8.4	585
400	---	6	---	103	8/81	1	.01	2	345	---	586
260	44	6	70	70	8/79	3	.02	---	---	---	587
240	22	6	80;210	7	8/81	2	.01	---	---	---	588
400	---	5	150	150	9/80	.5	.01	---	---	---	589
400	20	6	---	---	---	.25	---	---	---	---	590
400	33	6	---	0	11/80	0	---	---	---	---	591
120	33	6	62;110	42	3/80	6	.08	2	120	---	592
120	---	5	79;106;110	---	---	12	---	---	---	---	593
400	21	6	---	117	8/81	.5	.01	1	285	---	594
400	28	6	85	85	9/79	.1	.01	---	---	---	595
400	26	6	160	100	9/80	35	.01	---	---	---	596
260	21	6	100;186;237	94	8/81	3	.02	3	140	---	597
65	21	6	28;65	18	2/80	20	.64	---	---	---	598
400	21	6	209	---	---	2	---	---	---	---	599
200	46	6	91;173	65	8/81	20	---	5	155	---	600
148	27	6	108;141	---	---	4	---	---	---	---	601
120	110	6	108	---	---	250	---	---	---	---	602
175	20	6	71;145;165	---	---	10	---	---	---	---	603
75	75	6	75	---	---	15	---	1	50	---	604
200	81	6	135;193	135	9/79	4	.06	---	---	---	605
150	86	6	126	---	---	5	---	---	---	---	606
120	73	6	80	70	6/80	6	.12	---	---	---	607
120	43	6	60	40	10/80	12	.15	1	50	7.8	608
250	39	6	100	70	10/80	4	.02	---	---	---	609
360	42	6	92;185;298;305	270	6/80	6	.07	---	---	---	610
220	62	6	87	---	---	8	---	1	50	7.2	611
400	41	6	285;289	280	6/80	2	.01	5	220	7.2	612
360	22	6	350	215	6/78	15	.10	---	---	---	613
120	42	6	60;90	60	8/80	6	.1	---	---	---	614
120	24	6	77;93;96	80	12/80	10	.25	---	---	---	615
100	75	6	94	30	1/81	60	.85	---	---	---	616
160	120	6	134;151	---	---	---	---	---	---	---	617

TABLE 14.

Well location: Number	Well location: Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ly-618	4114-7649	Lycoming Mall	Harrisburg's Kohl Bros.	1977	N	520	V	DSkt/ls
619	4114-7649	do.	do.	1977	N	520	V	DSkt/ls
620	4113-7700	R. Herser	New Way Drilling Inc.	1979	H	800	S	Sc/sh
621	4113-7700	M. Haley	do.	1979	H	800	S	Sc/sh
622	4113-7700	W. Klotz	do.	1979	H	800	S	Sc/sh
623	4113-7700	Cristine	do.	1979	H	800	S	Sc/sh
624	4113-7700	L. Lynch	do.	1978	H	740	S	Sbm/ss
625	4113-7700	J. Bower	do.	1979	H	800	S	Sc/sh
626	4119-7640	G. Edkin	Gordon E. Hill	1980	H	920	S	Dck/sh
627	4119-7641	R. Braster	do.	1980	H	870	V	Dck/sh
628	4119-7641	M. Gray	do.	1980	H	860	V	Dck/sh
629	4116-7642	N. R. Renn	do.	1979	H	630	V	Qal/sg
630	4117-7636	J. Altland	Richard L. Marsh	1980	H	1145	S	Dck/sh
631	4116-7632	R. Bressler	Gordon E. Hill	1979	H	1310	S	Dck/sh
632	4115-7629	R. Charles	Stackhouse & Son Inc.	1980	H	1325	F	Dck/---
633	4115-7629	Theron Robbins	L. Titman and F. Stackhouse	---	P	1320	F	Dck/sh
634	4122-7649	J. Coleman	New Way Drilling Inc.	1977	H	720	S	MDhm/ss
635	4118-7644	D. Steiger	Richard L. Marsh	1978	H	910	S	Dck/ss
636	4115-7629	B. Charles	Stackhouse & Son Inc.	1980	H	1265	F	Dck/---
637	4118-7653	V. Rosemurgy	Richard L. Marsh	1978	H	870	S	Dck/sh
638	4117-7656	Bowman	New Way Drilling Inc.	1980	H	650	S	Dlh/sh
639	4115-7656	S. Rittel	do.	1978	H	550	S	Dtr/---
640	4116-7656	J. Bowman	do.	1979	H	580	S	Dlh/sh
641	4117-7659	C. Schon	do.	1977	H	980	S	Dlh/sh
642	4116-7659	S. Tweeg	do.	1978	H	600	S	Dtr/sh
643	4116-7654	M. Twigg	do.	1978	H	560	S	Dtr/sh
644	4120-7655	A. Scott	do.	1979	H	624	V	Qal/sg
645	4119-7655	M. Hughs	do.	1977	H	615	V	Qal/sg
646	4119-7652	W. Clarkson	do.	1980	H	930	S	Dlh/sh
647	4119-7656	G. Morse	Wieand Brothers	1981	H	910	S	Dck/---
648	4120-7656	C. Hall	Gordon E. Hill	1980	H	890	S	Dck/sh
649	4116-7654	M. McClain	Wieand Brothers	1979	H	900	S	Dtr/---
650	4115-7654	G. Oechler	do.	1979	H	960	H	Dtr/---
651	4118-7700	C. Snyder	Gordon E. Hill	1978	H	1020	S	Dlh/---
652	4117-7700	B. Brown	New Way Drilling Inc.	1978	H	930	S	Dlh/---
653	4116-7703	Regel's Lawn and Garden	do.	1978	H	570	V	Dlh/---
654	4116-7703	Big Wrangler Restaurant	Wieand Brothers	1981	P	555	V	Dlh/---
655	4117-7706	W. Fischer	New Way Drilling Inc.	1980	H	760	W	Dck/---
656	4116-7705	D. Gitgen	do.	1978	H	670	S	Dlh/---
657	4115-7703	W. McGarvey	do.	1979	H	600	S	Dlh/---
658	4113-7701	Beschof	do.	1978	H	680	S	Sbm/sh
659	4113-7701	C. Chamberlin	do.	1980	H	760	S	Sbm/sh
660	4123-7727	Martin Bender	do.	1979	H	695	S	Dck/---
661	4123-7726	G. Hocker	Frank Copenhaver	1977	H	665	V	Dck/---
662	4123-7726	J. Shaffer	do.	1977	H	662	V	Dck/---
663	4121-7715	B. Schloman	New Way Drilling Inc.	1980	H	1930	H	MDhm/ss
664	4123-7727	H. Witmer	Frank Copenhaver	1978	H	---	H	Dck/sh
665	4115-7716	D. Hillyard	New Way Drilling Inc.	1979	H	880	S	Dck/---
666	4124-7727	Leonard Laplaka	C. S. Garber & Sons, Inc.	1975	H	685	V	Dck/ss
667	4124-7727	W. Sample	Frank Copenhaver	1978	H	695	V	Dck/sh
668	4124-7727	Charles Shipman	do.	1980	H	689	S	Dck/sh
669	4124-7727	M. Campbell	do.	1977	H	690	V	Dck/---
670	4124-7727	do.	do.	1977	H	690	V	Dck/---
671	4124-7727	J. Becker	do.	1977	H	690	V	Dck/---
672	4124-7728	Vincent Arena	do.	1977	H	740	S	Dck/sh
673	4124-7728	D. Welkey	do.	1978	H	730	S	Dck/sh
674	4124-7728	Ray Smith	do	1977	H	690	V	Dck/---
675	4132-7706	Ray Wheeland	Willard S. Kuser	1978	H	1820	H	Dck/---
676	4118-7658	M. Prowant	New Way Drilling Inc.	1979	H	980	S	Dlh/sh
677	4115-7700	Frank Wolynic and Son, Inc.	Andrew E. Trautner	---	N	620	V	Dbh/---
678	4133-7657	Roaring Branch Water Assoc.	---	---	P	980	S	Dck/---
								MONTOUR
Mt- 34	4058-7644	Steve Rine	Wieand Brothers	1975	H	670	H	DSkt/---
37	4058-7642	Eugene Appleman	do.	1972	H	620	S	Dh/---
42	4058-7643	Donald Golder	R. R. Hornberger	1968	H	630	S	Dh/---
59	4101-7638	Randall Billmeyer	Wieand Brothers	---	H	880	H	Dtr/---
60	4100-7642	Peter Cooper	do.	1977	H	600	S	Dtr/---
61	4100-7642	R. Hedding	Ronald Randler	1978	H	720	S	Dtr/---
62	4100-7642	James Dunkle	do.	1969	H	730	S	Dtr/---
63	4101-7640	William Starr	do.	1977	H	740	S	Dtr/---
64	4100-7643	Henry Schmidt	do.	1978	H	520	V	Dtr/---
65	4101-7642	M. Stahl	do.	---	H	530	S	Doo/---
66	4101-7643	Kenneth Permar	R. R. Hornberger	1967	H	580	S	Doo/---
67	4102-7641	Rick Burkhart	Ronald Randler	1977	H	540	S	Doo/--
68	4102-7641	John Tanner	R. R. Hornberger	1970	H	580	S	Doo/---
69	4101-7643	Ralph Swartz	Ronald Randler	1976	H	525	S	Dh/---
71	4100-7639	Anna Schenk	do.	1967	H	895	S	Dtr/---
72	4100-7639	Andras	do.	1966	H	900	S	Dtr/---
73	4100-7639	Roland Reedy	do.	1966	H	900	S	Dtr/---
74	4101-7640	Harry Hawkins	do.	1969	H	542	S	Dh/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
300	44	16	---	50	8/77	390	13	---	---	---	Ly-618
300	54	10	---	60	8/77	460	9.6	---	---	---	619
120	82	6	97	90	9/79	15	0.5	2	110	---	620
180	105	6	160	130	5/79	12	.24	2	105	---	621
140	65	6	75;87;127	65	8/79	12	.16	---	---	---	622
200	122	6	188	120	12/79	60	.75	---	---	---	623
95	87	6	---	63	6/78	60	2.0	---	---	---	624
140	110	6	107;122	100	9/79	10	.25	---	---	---	625
250	20	6	223	---	---	5	---	---	---	---	626
125	53	6	101	---	---	20	---	---	---	---	627
150	52	6	102;138	22	8/81	8	---	6	205	7.6	628
51	51	6	---	20	8/81	10	---	3	120	7.4	629
178	59	6	168	---	---	5	---	---	---	---	630
400	55	6	231	---	---	1	---	---	---	---	631
173	41	6	137;170	51	8/81	8	---	1	50	7.1	632
75	40	6	70	---	---	---	---	---	---	---	633
90	60	6	65;78	60	10/77	20	.66	---	---	---	634
134	44	6	95;134	---	---	10	---	2	75	7.6	635
148	84	6	36;137	---	---	8	---	---	---	---	636
220	40	6	75;200	---	---	2	---	---	---	---	637
160	20	6	70;150	70	2/80	12	.13	---	---	---	638
180	38	6	80;126	80	7/78	4	.04	4	140	7.3	639
80	55	6	56;67	20	7/79	60	1.0	---	---	---	640
200	92	6	100;191	79	11/77	45	.29	7	245	7.5	641
300	81	6	100	76	8/81	1	.01	5	160	---	642
140	29	6	120	75	11/78	6	.05	---	---	---	643
51	52	6	---	25	11/79	30	1.2	---	---	---	644
37	36	6	---	15	12/77	30	1.4	---	---	---	645
200	57	6	93;160	80	3/80	3	.02	---	---	---	646
348	124	6	146;195;245; 319	96	8/81	6	---	3	150	---	647
225	62	6	176	---	---	6	---	---	---	---	648
298	41	6	268	---	---	10	---	---	---	---	649
248	40	6	210;221	117	8/81	10	---	7	270	7.2	650
175	74	6	165	---	---	20	---	---	---	---	651
400	26	6	260	200	8/78	.5	.01	---	---	---	652
200	35	6	80;168	40	10/78	5	.03	3	170	---	653
123	41	6	67;74;83; 109	---	---	15	---	---	---	---	654
120	22	6	80	70	10/80	6	.12	---	---	---	655
200	24	6	150	41	8/81	2	.02	1	305	---	656
180	21	6	51;75;87	20	8/81	4	.03	---	---	---	657
180	89	6	98;153	100	6/78	5	.06	---	---	---	658
200	0	5	100	80	10/80	3	.02	4	220	---	659
120	60	6	80	78	8/81	3	.5	3	1400	---	660
24	24	6	---	9	12/77	9	1.1	4	180	---	661
25	28	6	---	8	12/77	12	1	---	---	---	662
500	34	6	470	390	11/80	15	.13	---	---	---	663
85	22	6	---	35	9/78	8	.21	---	---	---	664
200	20	6	71;131;195	70	10/79	5	.03	---	---	---	665
80	34	6	60;71	25	9/75	6	.10	---	---	---	666
52	36	6	51	18	8/81	32	2.2	---	205	---	667
100	25	6	42;90	41	8/81	11	.22	1	50	---	668
33	33	6	33	19	11/77	26	8.6	2	55	---	669
36	36	6	36	18	11/77	28	7.0	---	---	---	670
31	31	6	31	18	12/77	32	5.3	---	---	---	671
80	10	6	30;60;75	30	10/77	6	.13	---	---	---	672
80	25	6	62;76	52	8/81	8	.32	7	245	---	673
26	26	6	26	8	10/77	6	.42	---	---	---	674
250	25	6	---	90	10/78	5	---	---	---	---	675
300	---	6	291	70	8/79	3	.01	---	---	---	676
550	150	---	---	---	---	30	---	---	---	---	677
430	---	6	---	10	---	---	---	---	---	---	678
COUNTY											
223	93	6	73;202	---	---	---	---	---	---	---	Mt- 34
127	20.5	6	50;70;85	---	---	15	---	---	---	---	37
95	5	6	31;60;80	---	---	5	.06	---	---	---	42
398	21	6	---	126	6/80	1	---	---	270	7.6	59
98	20	6	42;68	---	---	20	---	9	368	7.7	60
150	31	6	145	26	10/78	4	.03	---	---	---	61
122	20	6	90;120	60	9/69	---	---	---	---	---	62
202	27	6	188	49	6/80	3	.03	---	107	7.2	63
93	11	6	80	11	10/78	10	.14	---	---	---	64
173	64	6	136;150	28	6/80	20	---	---	315	7.4	65
95	51	6	65;90	30	4/67	50	.77	---	440	7.3	66
83	50	6	80	44	12/77	20	.51	---	105	6.5	67
90	46	6	56;68;86	43	7/70	12	---	---	205	7.3	68
86	39	6	80	33	6/80	20	.77	---	165	7.4	69
167	20	6	50;70;165	36	5/67	40	.82	---	---	---	71
195	27	6	55;135;193	55	6/66	10	.07	---	---	---	72
173	31	6	45;125;170	35	6/66	5	.04	---	---	---	73
82	20	6	80	1	7/69	6	.07	---	---	---	74

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Mt- 75	4102-7639	Russell Hendricks	R. R. Hornberger	1976	H	620	S	Oh/---
76	4102-7638	Leon Vandine	do.	1976	H	620	S	Oh/---
78	4100-7640	Ronald Horne	Ronald Randler	1977	H	825	S	Dtr/---
79	4102-7640	Village Inn	R. R. Hornberger	1974	T	509	V	Doo/---
80	4103-7640	Danville Area Joint Sch.	do.	1968	T	565	S	Oh/---
81	4103-7640	Bell Telephone	Champion Drilling	1975	H	540	S	Doo/---
82	4103-7640	Rand Parker	R. R. Hornberger	1966	H	520	S	Ooo/---
83	4102-7641	Wayne Leighow	Wieand Brothers	1977	H	530	V	Ooo/---
85	4102-7640	Marvin Funk	Norman Hagenbuch	1950	H	525	V	Oh/---
86	4104-7641	Mrs. Martz	R. R. Hornberger	1968	H	520	V	Ooo/---
87	4103-7642	Jerry Gresh	Wieand Brothers	1977	H	760	S	OSkt/---
88	4103-7642	Richard Hoffman	do.	1976	H	740	S	DSkt/---
89	4104-7642	Dean Hebner	R. R. Hornberger	1976	H	665	S	Doo/---
90	4103-7641	Jay Sitler	---	1976	H	582	S	Doo/---
91	4103-7641	Lon Tarr	Wieand Brothers	1977	H	680	S	Ooo/---
92	4104-7640	David McMichael	R. R. Hornberger	1969	H	515	V	Dh/---
93	4105-7638	Clarence McMichael	do.	1967	H	580	W	Dh/---
94	4105-7638	Jimmy Holdren	do.	1966	H	605	S	Dh/---
95	4106-7638	Dale Sommers	do.	1968	H	665	S	Oh/---
96	4107-7638	Karl McWilliams	do.	1966	H	720	S	Dh/---
97	4106-7637	Allen Dewald	do.	1967	H	712	S	Oh/---
98	4106-7637	Hershey	do.	1966	H	712	S	Dh/---
99	4106-7637	McGargle	Clifton Buck	1968	H	680	S	Oh/---
100	4106-7637	George Holdren	R. R. Hornberger	1968	H	730	S	Oh/---
101	4106-7637	Bryon Sheatler	Virgil Buck	1978	H	660	S	Oh/---
102	4103-7639	Richard Baker	Ronald Randler	1966	H	530	V	Oh/---
103	4102-7638	Fred Moser	R. R. Hornberger	1967	H	565	V	Dh/---
104	4103-7637	Norma Bartlett	Virgil Buck	1972	H	525	S	Dh/---
105	4103-7636	Harvey Davis	R. R. Hornberger	1973	H	640	W	Dh/---
106	4103-7637	Wayne Bay	do.	1973	H	550	S	Dh/---
107	4104-7637	S. Stoltzfus	Ronald Randler	1979	H	535	S	Dh/---
108	4104-7638	Jonas Beiler	do.	1976	H	535	S	Dh/---
109	4104-7639	Robert McMichael	R. R. Hornberger	1967	H	545	V	Dh/---
110	4104-7638	Sanford Brown	Wieand Brothers	1974	H	565	V	Dh/---
111	4100-7646	D. Lazerus	do.	1978	H	560	S	Dh/---
112	4106-7643	David Strouse	Ronald Randler	1980	H	610	S	Oh/---
113	4106-7643	Mary Hall	do.	1966	H	605	S	Dh/---
114	4106-7641	Joseph Davis	Titman and Stackhouse	1972	H	575	V	Dh/---
115	4106-7641	Exchange Grange	Ronald Randler	1967	H	580	V	Oh/---
116	4106-7641	Warrior Run Sch.	R. R. Hornberger	1966	T	645	S	Oh/---
117	4106-7640	Franklin Shupp	Ronald Randler	1967	H	665	H	Dh/---
118	4106-7641	David Litchard	R. R. Hornberger	1967	H	640	S	Dh/---
119	4106-7642	Robert Brouse	Ronald Randler	1968	H	590	S	Dh/---
120	4107-7642	Hal Thomas	Wieand Brothers	1976	H	650	S	Oh/---
121	4107-7640	Leonard Lyons	Ronald Randler	1969	S	685	S	Dh/---
122	4107-7640	James Turri	R. R. Hornberger	1975	H	670	S	Dh/---
125	4102-7641	Roy Olrich	do.	1967	H	560	S	Doo/---
126	4102-7644	O. Fleming	Norman Hagenbuch	1969	H	670	H	DSkt/---
127	4102-7644	James Temple	R. R. Hornberger	1967	H	550	V	DSkt/---
128	4102-7644	Wayne Mincemoyer	Wieand Brothers	1972	H	560	V	DSkt/---
129	4104-7643	Earl Harris	do.	1976	H	660	S	DSkt/---
130	4103-7642	Guy McCollum	R. R. Hornberger	1967	H	700	S	DSkt/---
131	4102-7643	Frank Smith	Wieand Brothers	1977	H	720	S	DSkt/---
132	4105-7644	Edward Beachel	R. R. Hornberger	1966	H	540	V	Doo/---
133	4106-7642	Ronald Miller	do.	1967	H	565	V	Dh/---
134	4106-7643	Albert Brown	do.	1967	H	605	S	Dh/---
135	4100-7643	Ronald Randler	Ronald Randler	1976	H	600	S	Dtr/---
136	4100-7643	Alicia Bridge	do.	1979	H	620	S	Dtr/---
137	4100-7643	Richard Smith	do.	1977	H	600	S	Otr/---
138	4100-7641	Kenneth Burrows	R. R. Hornberger	1972	R	740	S	Dtr/---
139	4101-7641	Loren Girton	do.	1972	H	660	S	Oh/---
140	4101-7643	O. Ale	Wieand Brothers	1978	H	620	S	Doo/---
141	4101-7643	Grace Bankus	Ronald Randler	1968	H	510	V	Dh/---
142	4101-7644	John Styer	R. R. Hornberger	1968	H	580	S	Doo/---
143	4102-7640	James Betz	Ronald Randler	1967	H	520	V	Doo/---
144	4104-7641	Maynard Cawton	do.	1969	H	525	V	Doo/---
145	4104-7640	Kenneth Bryfogle	Gordon E. Hill	1980	C	525	V	Dh/---
146	4106-7640	Pa. Power and Light	R. R. Hornberger	1974	R	645	H	Dh/---
147	4105-7639	do.	---	1972	R	560	S	Dh/---
148	4106-7639	do.	R. R. Hornberger	1974	R	605	W	Dh/---
149	4106-7640	Richard Hess	---	1969	H	570	S	Dh/---
151	4107-7637	Ross McCollum	R. R. Hornberger	1977	H	765	H	Dh/---
152	4100-7641	Kenneth Burrows	do.	1968	W	780	S	Dtr/---
166	4104-7637	Donald Robbins	Ronald Randler	1967	H	549	V	Dh/---
173	4104-7640	Kenneth Bryfogle	Gordon E. Hill	1980	C	525	V	Oh/---
175	4104-7638	Jonas Beiler	Ronald Randler	1976	H	535	S	Oh/---
179	4108-7643	G. Leonard	Wieand Brothers	1979	H	880	S	Otr/---
190	4103-7640	Washingtonville Community Hall	Clarence A. Grove	1928	T	562	V	Doo/ls
191	4104-7639	Dairyman's Cooperative Assoc.	S. W. Eves	---	N	545	V	Oh/---
210	4059-7643	E. Hildebrand	Ronald Randler	1978	H	685	S	Dtr/---
211	4058-7643	M. Prowant	Roy Zimmerman	1973	H	615	U	Ooo/---
212	4059-7644	R. Schreck	do.	1976	H	600	H	Oh/---

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
110	20	6	55;95	43	6/80	12	---	---	265	7.6	Mt- 75
80	20	6	68	2	6/80	15	---	---	295	7.4	76
160	16	6	155	73	6/80	4	.08	---	162	8.0	78
29	23	---	---	6	6/80	12	---	10	347	7.1	79
215	44	7	85;158;210	60	1/68	30	.19	---	---	---	80
150	30	6	75;130	---	---	8	---	53	2400	7.3	81
130	25	6	86;115	17	7/66	3	---	---	---	---	82
73	20	6	37	17	6/80	60	---	10	328	7.3	83
210	---	---	---	15	6/80	2	---	4	401	8.6	85
60	23.5	6	29;49	2	2/68	50	0.86	---	---	---	86
298	20	6	255	---	---	10	---	---	---	---	87
298	60	6	248	---	---	---	---	11	379	7.9	88
155	20	6	60	46	5/76	3	---	---	---	---	89
173	38	6	120;147	---	---	15	---	---	---	---	90
348	250	6	316;330	158	7/80	30	---	16	605	7.8	91
205	20	6	175;205	8	7/80	3	---	7	381	---	92
415	30	6	45;87;196;296	7.6	7/80	2	.03	8	554	---	93
225	20	6	175;215	5	6/66	2	.03	---	---	---	94
304	26	6	117	25	4/68	1	.03	7	399	7.8	95
70	19	6	50	20	8/66	30	.67	6	253	7.7	96
130	18	---	100;120	17.6	7/80	2	.03	---	---	---	97
170	36	6	164	25	8/66	20	.14	---	---	---	98
257	---	---	210	10	5/68	4	.03	---	---	---	99
155	24	6	121;149	6	2/68	5	.03	---	---	---	100
155	20	6	30;80;140	20	5/78	4	.03	---	---	---	101
84	16	6	25;50;84	16	5/66	6	.09	---	---	---	102
50	26	6	46	5	6/67	15	.33	---	---	---	103
218	20	6	75;210;218	---	---	4	---	---	---	---	104
80	30	6	---	26	2/73	10	---	---	---	---	105
250	21	6	---	10	8/73	1	---	2	399	9.0	106
180	16	6	180	13	7/80	2	.03	---	---	---	107
268	19	6	60;260	14.5	7/80	1	.03	---	---	---	108
81	42	6	63	---	---	4	.06	---	---	---	109
346	21	6	236;251	26	7/80	4	---	1	460	9.0	110
448	22	6	300	10	2/78	3	---	---	---	---	111
118	---	---	---	---	---	11	---	4	---	---	112
75	22	6	73	15	12/66	7	.12	---	---	---	113
70	28	6	68	---	---	12	---	---	---	---	114
35	25	6	33	4	3/67	15	.48	---	---	---	115
215	82	7	118;184	60	12/66	15	.10	---	---	---	116
122	52	6	85;120	32	9/67	10	.11	---	---	---	117
184	---	---	50;105;180	22	11/67	8	.05	31	1150	7.3	118
80	35	6	45;78	---	---	50	3.3	---	---	---	119
248	18	6	203	47	7/80	10	---	---	---	---	120
200	10	6	105	15	5/69	2	.03	11	448	7.6	121
175	20	6	---	10	7/73	3	---	---	---	---	122
128	26	6	120	2.3	7/80	40	.41	7	208	---	125
300	---	---	165;225;285	150	4/69	20	---	---	---	---	126
33	20	6	25	11	5/67	40	1.8	14	---	8.1	127
80	41.5	6	---	12.6	7/80	30	---	---	---	---	128
223	63	6	185	93.4	7/80	20	---	9	408	8.1	129
195	136	6	170;189	100	5/67	5	.05	10	367	7.9	130
248	63	6	150;198	115	7/80	12	---	---	---	---	131
215	23	6	26;195	6.8	7/80	3	.03	---	---	---	132
51	50	6	50	4	8/67	40	.85	---	---	---	133
123	29	6	69	22	9/67	2	.03	---	---	---	134
102	8	6	100	36	12/76	10	.15	---	---	---	135
77	22	6	75	33	7/79	20	.45	---	---	---	136
82	8	6	78	36	9/77	40	4.0	---	---	---	137
430	18	6	---	22	7/80	1	---	9	325	7.6	138
150	20.5	6	---	---	---	3.5	---	7	300	7.8	139
122	84	6	97	40	7/78	30	---	---	---	---	140
45	30	6	30;44	7	6/68	40	---	---	---	---	141
160	48	6	69;157	50	3/68	5	.05	---	---	---	142
48	43	6	42	20	3/67	20	2.0	---	---	---	143
38	31	6	38	5	9/69	6	.18	---	---	---	144
150	20	6	---	18	7/80	45	---	---	---	---	145
255	52	6	---	61	7/80	30	.19	11	442	7.8	146
200	41	6	75;90;140;200	7	7/80	23	---	8	480	7.8	147
150	42	6	---	20	7/80	30	.44	18	308	7.6	148
70	---	---	---	15	7/80	---	---	11	450	7.6	149
195	20	6	90;185	25	7/80	4	---	---	---	---	151
506	20.5	6	89;134;291	60	8/68	4	.03	---	---	---	152
76	16	6	25;73	5	9/67	15	.21	6	355	---	166
250	31	6	---	18	7/80	25	---	---	---	---	173
285	14	6	50;198	6	4/81	3	.03	9	550	---	175
448	39	6	100	82	6/79	1	---	---	---	---	179
230	40	6	---	25	---	10	---	---	---	---	190
200	---	6	---	20	---	25	---	27	---	---	191
126	20	6	---	9	11/78	---	---	---	---	---	210
110	40	6	---	52	6/78	---	---	---	---	---	211
305	---	---	---	---	---	---	---	---	---	---	212

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Mt-213	4058-7644	C. Rine	R. R. Hornberger	1958	H	520	W	Oh/---
251	4058-7641	8. H. Ludwig	Robert H. Zimmerman	1980	H	1010	H	5c/---
								NORTHUM8ERLAND
Nu- 9	4101-765D	Milton Ice Co.	Clarence A. Grove	1928	N	500	V	Swc/---
10	4101-7650	Pleasant Valley Creamery	do.	---	N	480	V	DSkt/---
11	4100-7651	Oairymen's Cooperative Assoc.	do.	1923	N	480	V	5bm/---
12	4106-7646	8errizi 8ros. 5ilk Mill	Kohl 8ros., Inc.	---	I	550	V	D5kt/ls
16	4106-7646	Dairymen's Cooperative Assoc.	Clarence A. Grove	1927	N	540	V	Doo/---
18	4106-7652	do.	---	---	U	480	V	05kt/ls
19	4106-7652	Dewart Milk Products Co.	Kohl 8ros., Inc.	1918	N	485	V	5wc/---
164	41D6-7644	Thelma 5trouse	Ronald Randler	1974	H	580	5	Doo/sh
165	4106-7644	James 5tyer	do.	1974	H	560	5	Dtr/ls
206	4107-7645	A. Eichenlaub	Richard L. Marsh	1980	H	680	V	Dh/---
207	4108-7645	H. Rovenolt	do.	1980	H	800	S	Dtr/sh
208	4109-7650	A. Millheim	Robert H. Zimmerman	1979	H	620	V	Otr/sh
209	4057-7650	F. Weaver	Wieand, Inc.	1979	H	520	5	05kt/---
210	4058-7647	5. Haseloff	do.	1978	H	485	W	D5kt/---
211	4059-7647	E. Erb	Robert H. Zimmerman	1980	H	505	H	Oh/---
212	4054-7648	D. Seebold	Gilbert R. Zechman	1980	H	670	5	Otr/---
213	4055-7649	C. Mengel	do.	1980	H	655	H	Ooo/---
214	4057-7651	T. Hoover	Robert H. Zimmerman	1980	H	465	5	5bm/---
248	41D4-7648	McEwensville 8or. Water Co.	Wieand 8rothers	1974	P	600	H	5wc/---
251	4100-7647	R. 8atman	Robert H. Zimmerman	1979	H	620	5	Doo/ls
252	4100-7647	K. 8ennage	Ronald Randler	1979	H	500	V	Oh/sh
253	4101-7647	K. O'Neil	Robert H. Zimmerman	1979	H	560	V	5wc/ls
254	4101-7648	R. Kerstetter	Wieand, Inc.	1978	H	660	5	5wc/---
255	4101-7649	C. 8ender	do.	1980	H	570	5	5bm/---
256	4103-7646	F. DeHart	Robert H. Zimmerman	1980	H	560	5	5wc/---
257	4106-7648	J. Wolfe	do.	1979	H	600	H	Doo/---
258	41D6-7647	D. Gauger	do.	1979	H	590	V	Doo/---
259	4106-7647	G. Rompella	do.	1979	H	600	H	Doo/---
260	4106-7647	O. 8arto	Wieand, Inc.	1979	H	600	H	Doo/---
261	4106-7647	R. 5ilvagni	Robert H. Zimmerman	1979	H	6D0	H	Doo/---
262	4106-7646	W. Koch	Wieand, Inc.	1978	H	540	5	Dh/sh
263	4106-7649	8. 8owersox	Robert H. Zimmerman	1979	H	580	5	Doo/---
264	4105-7648	J. 5navely	do.	1979	H	500	V	5wc/---
265	4106-7651	Christian Missionary Alliance Ch.	Wieand, Inc.	1980	P	550	H	5wc/---
266	4105-7650	5. Wolford	Robert H. Zimmerman	1981	H	640	5	Swc/ls
267	41D5-7650	F. Harmon	do.	1981	H	580	5	5bm/sh
268	4105-7650	M. Benfer	do.	1980	H	600	5	5bm/---
269	41D4-7650	R. Tanner	Wieand, Inc.	1979	H	580	5	5bm/---
270	4106-7646	Lewis Twp.	R. R. Hornberger	1978	P	530	V	Doo/---
271	4104-7649	S. Raup	Robert H. Zimmerman	1979	H	500	V	5wc/---
272	4102-7650	R. Baker	Wieand, Inc.	1981	H	500	V	5wc/---
273	4101-7649	W. Reish	Robert H. Zimmerman	1978	H	540	5	5wc/ls
274	4104-7650	5. Funk	do.	1979	H	460	V	5wc/ls
275	4106-7652	H. English	do.	1978	H	480	V	Sbm/ls
276	4106-7645	T. 5trausser	R. R. Hornberger	1977	H	580	V	Oh/---
								POTTER
Po- 62	4140-7806	Pa. Dept. of Forests and Waters	Freer Water 5ervice	---	P	1820	5	Dck/---
63	4137-7805	Austin 8or. Water Works	---	---	P	1590	S	Dck/---
65	4156-7738	Harrison Valley Mineral Water Co.	---	---	B	1620	V	Dlh/---
70	4139-7749	Cherry 5prings Pk.	Paul H. Cizek	---	H	2285	H	Pp/---
72	4146-7749	U. 5. Geol. 5urvey	Germania Drilling Co.	1967	U	1810	5	Ock/sh
73	4132-7744	Pa. Oept. of Forests and Waters	do.	1967	---	1240	V	Dck/---
74	4132-7744	do.	---	1967	---	1240	V	Ock/---
76	4143-7739	Galeton-Eldred Water Co.	Layne-New York Co., Inc.	1960	P	1355	V	Dck/---
80	4138-7739	Vernon Cezic	Germania Orilling Co.	---	H	1920	V	Dlh/---
81	4138-7739	George Rawson	do.	---	H	1940	V	Dlh/---
82	4139-7755	Pa. Oept. of Forests and Waters	Howard Gale	1957	---	1590	V	Dck/---
83	4143-7745	do.	Kenneth 8arnes	1954	---	1735	V	Dck/---
87	4130-7802	E. 5nyder	John P. Timmerman	1980	H	1130	H	Dck/---
88	4131-7800	National Fuel Gas 5upply	Germania Orilling Co.	1980	N	1150	V	Dck/---
89	4131-7801	J. Lentz	John P. Timmerman	1980	H	1200	S	Dck/---
90	4135-7803	J. Majot	do.	1979	H	1205	V	Dck/---
91	4135-7803	G. Seaford	do.	1980	H	1105	V	Dck/---
92	4135-7803	R. Woid	do.	1980	H	1219	V	Dck/---
93	4135-7803	Clifford Stuckey	Germania Drilling Co.	1973	H	1190	V	Dck/sh
94	4135-7803	Earl Glover	do.	1977	H	1215	V	Ock/---
95	4136-7802	Otto Ourchlander	John P. Timmerman	1979	H	1235	V	Dck/---
96	4132-7759	K. Calabrese	Germania Drilling Co.	1978	H	1150	V	Ock/---
97	4134-7800	T. 5hirey	John P. Timmerman	1980	H	1400	S	Dck/---
98	4134-7800	F. Lucas	do.	1979	H	1310	S	Dck/---
99	4132-7801	R. Kerm	Germania Drilling Co.	1979	H	1110	V	Dck/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
120	60	6	---	---	---	---	---	---	---	---	Mt-213
97	43	6	87	---	---	10	---	3	78	---	251
COUNTY											
328	30	8	---	22	---	75	---	---	---	---	Nu- 9
602	30	8	350	19	---	125	---	---	---	---	10
260	35	8	---	F	---	90	3.0	85	---	---	11
196	30	6	---	F	---	17	---	20	---	---	12
293	32	8	---	8	---	25	.09	---	---	---	16
465	---	---	---	20	---	150	---	---	---	---	18
210	---	6	---	75	---	---	---	20	---	---	19
80	14	6	75	---	---	6	---	---	---	---	164
74	13	6	70	---	---	50	---	---	---	---	165
195	40	6	115;192	---	---	20	---	---	---	---	206
400	29	6	115	92	---	1	---	6	270	7.6	207
110	21	6	---	---	---	0	---	---	---	---	208
148	100	6	125	71	9/81	15	---	---	---	---	209
273	41	6	191;207;236	16	9/78	15	---	17	470	---	210
197	20	6	98	---	---	1	---	15	365	---	211
185	63	6	74;173	77	10/81	15	---	3	120	---	212
325	272	---	283;295;323	140	8/80	7	---	---	---	---	213
122	38	6	96	---	---	10	---	---	---	---	214
247	---	8	176;210	---	---	77	---	---	---	---	248
148	43	6	74;122	35	10/81	20	---	---	---	---	251
143	19	6	140	2	9/79	3	---	---	---	---	252
123	32	6	46;96	---	---	10	---	---	---	---	253
198	41	6	144;178	60	5/78	7	---	---	---	---	254
248	40	6	48;231	39	10/81	20	---	9	400	---	255
96	42	6	73	27	10/81	20	---	---	---	---	256
170	19	6	96;143	---	---	30	---	10	500	7.6	257
148	40	6	96;129	---	---	10	---	6	300	7.6	258
70	20	6	48	---	---	20	---	---	---	---	259
273	42	6	254	43	8/79	10	---	---	---	---	260
170	22	6	148	---	---	5	---	---	---	---	261
98	45	6	43;70	22	10/81	20	---	---	---	---	262
98	19	6	72	---	---	10	---	---	---	---	263
73	22	6	---	---	---	30	---	---	---	---	264
198	81	6	140;176	---	---	60	---	---	---	---	265
172	47	6	---	---	---	20	---	---	---	---	266
197	23	6	130;182	---	---	3	---	---	---	---	267
147	61	6	122	---	---	20	---	---	---	---	268
173	42	6	130;145	---	---	12	---	---	---	---	269
42	20	6	30	7	1978	10	---	---	---	---	270
120	26	6	111	---	---	15	---	---	---	---	271
148	42	6	65;81;118;133	49	10/81	20	---	10	600	---	272
150	41	6	113	---	---	10	---	---	---	---	273
73	42	6	---	---	---	12	---	11	500	7.70	274
123	42	6	96	---	---	18	---	10	520	---	275
72	20	6	28;62	7	1977	10	---	---	---	---	276
COUNTY											
200	88	6	135;163;188	53	---	10	---	---	---	---	Po- 62
230	---	8	---	---	---	180	18	---	---	---	63
200	50	---	---	25	---	---	---	---	---	---	65
169	25	6	54;159	12	---	40	2.0	---	---	---	70
110	22	6	55;84	18	10/67	12	.74	---	---	---	72
100	32	6	40;60;95	13	---	---	---	---	---	---	73
140	---	---	65;80	---	---	---	---	---	---	---	74
218	66	12	---	---	5/60	205	17	---	---	7.3	76
132	---	---	---	---	---	4	---	---	---	---	80
77	---	---	---	---	---	15	3.93	---	---	---	81
83	30	6	34;70;80	---	4/57	10	.39	---	---	---	82
77	21	6	35;65	---	10/54	10	.83	---	---	---	83
125	33	6	58	92	7/81	7	---	5	200	7.3	87
122	58	6	---	44	7/81	2	.03	2	1000	6.9	88
153	29	6	153	100	12/80	6	.13	---	---	---	89
70	28	6	65	40	9/79	---	---	---	---	---	90
59	32	6	57	30	9/80	12	.92	---	---	---	91
83	32	6	83	60	9/80	---	---	---	---	---	92
60	23	6	---	1	7/81	12	---	22	1900	6.3	93
73	39	6	---	18	6/77	3	.06	5	340	7.2	94
48	31	6	38	25	9/79	---	---	---	---	---	95
73	24	6	---	20	11/78	80	---	---	---	---	96
131	33	6	131	94	7/80	14	.70	3	155	7.4	97
92	21	6	---	65	11/79	30	3.0	---	---	---	98
37	26	6	---	31	7/79	10	.53	---	---	---	99

TABLE 14.

Well location: Number	Well location: Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Po-100	4133-7801	D. Harlacker	Germania Drilling Co.	1979	H	1135	V	Dck/---
101	4132-7801	No Dear Hunting Club	do.	1979	---	1115	V	Dck/---
102	4142-7759	B. Rossini	do.	1979	H	1140	S	Dck/---
103	4143-7756	W. Sallade	Walter L. Phillips	1978	H	1945	V	Dck/---
104	4139-7755	W. Henry	John P. Timmerman	1980	H	1670	S	Dck/---
105	4143-7802	J. Duca	Walter L. Phillips	1979	H	1990	S	Dck/---
106	4142-7803	Glassmire	Cleo Harris	1979	---	2200	H	Dck/---
107	4142-7803	G. Moore	do.	1980	H	2055	H	Dck/---
108	4143-7801	F. Hiller	Germania Drilling Co.	1980	H	2010	S	Dck/---
109	4142-7802	F. Youngflesh	do.	1978	H	1930	S	Dck/---
110	4141-7804	S. Goodreau	John P. Timmerman	1980	H	1850	V	Dck/---
111	4141-7806	R. Salsgiver	do.	1980	H	1900	S	Dck/---
112	4141-7806	E. Brooks	Germania Drilling Co.	1979	H	1810	S	Dck/---
113	4140-7807	N. Linder	do.	1978	H	2095	H	Dck/---
114	4140-7807	R. Amell	do.	1978	H	2000	H	Dck/---
115	4140-7807	M. Pratt	do.	1978	H	2095	S	Dck/---
116	4140-7807	J. Hawthorne	do.	1978	H	2122	H	Dck/---
117	4138-7807	B. Lutz	do.	1979	H	1510	V	Dck/---
118	4139-7749	Cherry Springs St. Pk.	Glenn Kellogg	1976	P	2320	H	Pp/---
120	4139-7749	D. Pepper	Germania Drilling Co.	1979	H	2305	H	Pp/---
121	4140-7750	Janet McSorley	do.	1979	H	2220	S	Pp/---
122	4140-7750	S. Harding	do.	1980	H	2242	H	Pp/---
123	4140-7750	C. Saint Sing	do.	1981	H	2165	S	MDhm/---
126	4137-7805	Emporium Specialties, Inc.	do.	1977	U	1360	V	Dck/---
127	4147-7743	J. Slaby	do.	1979	H	1660	S	Dlh/---
128	4150-7742	D. Hollis	Walter L. Phillips	1978	H	1720	S	Dck/---
129	4151-7742	J. Stephens	do.	1979	H	1875	S	MDhm/---
130	4149-7740	W. Garman	Germania Drilling Co.	1979	H	2285	H	Dck/---
131	4148-7739	A. Massa	---	1979	H	2150	S	Dck/---
132	4147-7744	Dunroven Sport Club	Germania Drilling Co.	1979	H	1535	V	Dlh/---
133	4146-7744	A. Reeser	do.	1979	H	1570	V	Dck/---
134	4146-7748	L. Rinehart	do.	1980	H	1720	V	Dck/---
135	4147-7744	Clair Brown	do.	1979	W	1570	S	Dlh/---
136	4149-7742	W. Tubbs	do.	1978	H	1700	S	Dck/---
137	4147-7743	G. Stahley	do.	1979	H	1580	S	Dlh/---
138	4146-7744	Howard Duell	do.	1975	H	1502	V	Dck/---
139	4152-7745	F. Hershey	do.	1978	H	2390	S	MDhm/---
140	4152-7746	K. Klutchkowski	do.	1978	H	2340	S	MDhm/---
141	4150-7747	R. Biele	do.	1977	H	1880	S	Dck/ss
142	4150-7750	W. Mahoskey	do.	1978	H	2420	S	Dck/---
143	4148-7746	J. Wintersteen	do.	1978	H	1700	S	Dck/---
144	4148-7746	H. Morrow	do.	1979	H	1640	V	Dck/---
145	4147-7745	W. Jackson	do.	1979	H	1620	V	Dlh/ss
146	4147-7745	J. Tribotte	do.	1976	H	1580	V	Dck/ss
147	4147-7745	J. Frey	do.	1979	H	1600	V	Dck/---
148	4147-7745	Sulley Cook	do.	1972	H	1620	S	Dck/sh
149	4147-7744	R. Schappell	do.	1980	H	1620	S	Dck/ss
150	4146-7744	M. Bosserman	do.	1978	H	1580	V	Dck/---
151	4133-7741	M. Hess	do.	1980	H	1300	V	Dck/---
152	4133-7742	H. Eppley	do.	1980	H	1360	S	Dck/---
153	4137-7742	W. Moyer	Paul H. Cizek	1978	H	1945	S	MDhm/ss
154	4131-7747	J. Wright	Germania Drilling Co.	1980	H	1190	V	Dck/ss
155	4131-7747	Camp McCoy	do.	1980	H	1200	S	Dck/---
156	4137-7744	J. Sutton	do.	1979	H	2055	S	Dck/ss
157	4137-7744	E. Biehl	Paul H. Cizek	1978	H	2030	S	Dck/ss
158	4138-7743	G. Breedy	do.	1978	H	1920	S	Dck/ss
159	4138-7743	R. Howell	Germania Drilling Co.	1980	H	1810	S	Dck/---
160	4138-7741	I. Bomberger	do.	1980	H	2030	S	Dck/---
161	4138-7741	G. Hummel	do.	1977	H	2070	S	Dck/---
162	4139-7740	J. Howey	do.	1980	H	2230	S	Dck/---
163	4140-7740	J. Carrigan	Paul H. Cizek	1978	H	2245	S	Dck/ss
164	4140-7740	L. Mummert	Germania Drilling Co.	1977	H	2300	H	Dck/---
165	4139-7741	M. Sweigart	Paul H. Cizek	1978	H	2140	S	Dck/---
166	4144-7736	G. Gundrum	Germania Drilling Co.	1980	H	1315	S	Dck/---
167	4144-7736	E. Bell	John P. Timmerman	1980	H	1350	S	Dck/ss
168	4142-7736	T. Craig	Germania Drilling Co.	1979	H	1750	S	Dck/ss
169	4143-7738	Melvin Kefover	---	1979	P	1410	S	Dck/ss
170	4143-7738	S. Crain	Germania Drilling Co.	1977	H	1420	S	Dck/---
171	4139-7737	W. Mosch	Paul H. Cizek	1978	H	2135	S	Dck/---
172	4140-7738	R. Grant	do.	1978	H	1760	V	Dck/---
173	4141-7738	R. Paul	Germania Drilling Co.	1979	H	1590	S	Dck/---
174	4141-7740	A. Brecher	do.	1979	H	2150	S	Dck/ss
175	4144-7738	R. Thompson	do.	1979	H	1340	S	Dck/ss
176	4156-7739	Northern Tier Children's Home	do.	1979	P	1710	S	Dlh/---
177	4156-7738	R. Truax	do.	1979	H	1619	S	Dlh/ss
178	4159-7738	A. Cady	do.	1978	P	1745	S	Dlh/ss
179	4155-7744	W. Vanetten	do.	1979	H	2200	S	Dck/---
180	4154-7736	Larry Walters	do.	1974	H	1710	S	Dlh/sh
181	4158-7737	Gene Hopkins	do.	1974	H	1715	S	Dlh/---
182	4155-7739	Carroll Cole	do.	1977	H	1860	V	Dlh/---
183	4156-7738	Harrison Valley Sch.	do.	1980	P	1630	V	Dlh/---
184	4156-7738	H. Stone	do.	1979	H	1655	V	Dlh/---
185	4157-7738	L. Kibbie	Walter L. Phillips	1978	H	1735	V	Dlh/---
186	4156-7742	Clifford Pollock	---	1975	H	1830	V	Dlh/ss
187	4145-7752	Potato City Motor Inn	Germania Drilling Co.	1980	P	2450	H	Pp/ss

(CONTINUED)

Total depth below land surface (feet)	Casing: Depth (feet)	Casing: Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
65	23	6	---	15	4/79	20	2.0	---	---	---	Po-100
58	26	6	---	7	7/81	20	---	---	---	---	101
97	31	6	---	52	8/79	20	---	---	---	---	102
69	29	6	63	33	7/81	---	---	2	115	7.2	103
225	31	6	225	175	5/80	9	.22	---	---	---	104
183	21	6	100;178	100	5/79	10	---	---	---	---	105
359	21	6	317;340	270	11/79	12	---	---	---	---	106
341	23	6	297;307	---	---	12	---	---	---	---	107
304	70	6	80;120;160	100	8/80	45	.33	2	---	7.6	108
146	28	6	---	76	10/78	14	---	---	---	---	109
80	32	6	80	65	9/80	---	---	---	---	---	110
150	11	6	100;145	120	10/80	---	---	---	---	---	111
87	58	6	---	49	7/81	18	---	2	---	7.4	112
307	32	6	---	100	7/78	6	---	---	---	---	113
308	30	6	---	197	7/81	5	---	2	---	7.5	114
315	21	6	---	150	12/78	20	---	---	---	---	115
328	23	6	140	105	12/78	5	---	---	---	---	116
51	20	6	---	51	7/79	15	---	---	---	---	117
209	20	14	90;150;190	118	7/81	10	.13	2	---	7.6	118
344	14	6	280	230	12/79	20	---	---	---	---	120
250	21	6	---	140	7/81	15	---	---	---	---	121
302	20	6	---	228	10/80	20	---	---	---	---	122
288	51	6	---	137	7/81	10	.06	---	---	---	123
200	22	8	65;150;175	50	2/77	170	17	---	---	---	126
155	52	6	---	65	8/79	20	2.0	---	---	---	127
65	36	6	48;62	30	9/78	8	.32	---	---	---	128
64	61	6	62	40	7/79	15	.75	---	---	---	129
230	25	6	---	129	9/79	20	---	---	---	---	130
30	19	6	---	80	9/79	7	.03	---	---	---	131
106	39	6	---	86	6/79	5	.06	---	---	---	132
60	30	6	---	5	1/79	10	.4	---	---	---	133
65	21	6	---	20	4/80	15	.38	---	---	---	134
84	61	6	---	29	10/79	12	.28	7	260	---	135
122	92	6	---	41	7/81	12	.19	5	180	---	136
95	71	6	---	34	7/81	40	---	3	350	---	137
65	25	6	---	3	7/81	30	---	7	300	---	138
328	23	6	---	85	12/78	20	---	---	---	---	139
140	39	6	---	75	12/78	40	4.0	---	---	---	140
155	40	6	---	60	7/77	40	4.0	3	140	8.6	141
164	21	6	---	59	6/78	9	.17	---	---	---	142
161	48	6	---	75	8/78	20	---	---	---	---	143
43	30	6	---	28	3/79	80	---	---	---	---	144
60	40	6	---	50	12/79	15	.75	---	---	---	145
92	44	6	---	---	---	10	---	---	---	---	146
100	62	6	---	45	3/79	20	.80	---	---	---	147
114	44	6	---	---	---	5	---	5	230	7.8	148
125	36	6	---	80	9/80	8	.20	---	---	---	149
54	32	6	---	33	5/78	40	2.2	---	---	---	150
61	10	6	---	20	11/80	10	.29	---	---	---	151
168	20	6	---	98	10/80	8	.13	---	---	---	152
298	60	6	---	123	5/78	5	.04	---	---	---	153
40	20	6	---	10	9/80	40	4.0	---	---	---	154
78	50	6	---	40	7/80	8	---	---	---	---	155
250	24	6	---	---	---	4.5	---	---	---	---	156
265	31	6	---	30	8/78	15	.75	---	---	---	157
158	31	6	---	80	---	4	.05	---	---	---	158
149	71	6	---	65	11/80	20	.37	---	---	---	159
248	23	6	---	170	10/80	6	.08	---	---	---	160
207	21	6	190;197;207	165	10/77	5	.17	1	380	---	161
268	26	6	135	88	1/80	20	---	3	100	---	162
292	24	6	---	212	8/78	15	.30	---	---	---	163
281	16	6	207	207	10/77	12	.09	---	---	---	164
168	35	6	93;126	75	1/78	10	.66	---	---	---	165
95	27	6	---	40	9/80	15	.31	---	---	---	166
150	91	6	---	110	12/80	---	---	6	170	---	167
151	42	6	---	80	7/81	12	.18	16	590	7.9	168
75	41	6	60	60	9/79	5	.66	4	---	7.8	169
170	46	6	110	75	11/77	7	.08	---	---	---	170
295	20	6	---	77	7/81	20	---	---	---	---	171
83	31	6	---	11	7/81	6	.12	3	480	7.0	172
44	26	6	39	25	8/79	50	5.0	---	---	---	173
327	19	6	140;190;300	167	10/79	30	---	---	---	---	174
106	40	6	---	36	7/81	5	.08	12	1400	7.8	175
140	63	6	---	40	7/79	60	---	---	---	---	176
90	92	6	---	---	---	10	.12	10	310	---	177
99	76	6	---	99	10/78	16	.17	---	---	---	178
210	19	6	---	110	11/79	6	.06	---	---	---	179
---	---	---	---	21	7/81	10	---	12	610	---	180
45	42	6	---	---	4/74	10	---	9	370	---	181
103	15	6	---	---	---	7	---	---	---	---	182
135	87	6	---	10	7/80	40	10	---	---	---	183
87	47	6	---	F	1/79	60	---	10	350	---	184
50	40	6	46	F	7/81	---	---	11	380	---	185
84	34	6	77	40	9/73	10	.41	13	370	---	186
183	27	6	---	32	11/80	80	3.6	---	---	---	187

TABLE 14.

Well location		Owner	Driller	Date completed	Use	Alti-tude of land surface (feet)	Topo-graphic setting	Aquifer/ lithology
Number	Lat-Long							
Po-188	4153-7742	J. Grover	Germania Orilling Co.	1980	H	1995	S	MDhm/---
189	4153-7742	S. Lampman	do.	1979	H	2D00	S	MOhm/---
201	4148-7746	E. Strausbaugh	do.	1978	H	1620	V	Dck/---
226	4146-7742	P. 8owen	do.	1979	H	1485	V	Dck/---
227	4146-7742	G. Bowen	do.	1977	P	1650	V	Dck/---
228	4144-7739	W. Green	do.	1979	H	1350	V	Ock/ss
229	4143-7739	R. Kertsmar	do.	1979	H	1420	S	Ock/---
230	4143-774D	W. Youndt	do.	1980	H	1440	S	Ock/ss
231	4141-7744	G. Hemmig	do.	1980	H	1590	V	Ock/---
								SULLIVAN
Su- 5	4120-7635	J. W. Moran	E. W. Artley	---	H	865	V	Qal/---
16	4124-7629	O. A. Kepner	do.	1931	H	1795	S	Mb/ss
21	4128-7622	8enjamin Calaman	Scanlon 8ros.	---	H	1840	S	Pp/---
26	4131-7622	Oushore Water Co.	---	---	P	1650	V	Ock/---
28	4131-7624	Harrington and Co.	Scanlon Bros.	---	N	1446	V	Ock/sh
34	4130-7635	U. S. Geol. Survey	8ernard Marshall	1965	U	1060	V	Dck/---
35	4131-7623	Dushore Bor. Water Works	Louis Wiemand	---	P	1495	V	Ock/---
41	4131-7623	Dushore 8or.	---	1969	P	1575	S	Ock/---
42	4131-7622	do.	---	1969	P	1595	W	Ock/---
43	4134-7646	Glenn Fields	Willard S. Kuser	1978	H	200D	V	MOhm/---
51	4121-7631	T. Eberlin	Robert F. Sanders	1979	H	1070	V	Ock/---
52	4121-7633	Lloyd Freas	George Turner	1975	H	1060	V	Dck/sh
53	4126-7642	Hillsgrove Fire Co.	do.	1975	P	865	V	Qal/sg
54	4126-7642	J. McHale	Robert F. Sanders	1979	H	870	F	Ock/---
55	4119-7634	C. 8ender	Stackhouse & Son Inc.	1980	H	1050	V	Ock/ss
56	4120-7633	J. Sheets	Richard L. Marsh	1980	H	925	V	Qal/sg
57	4121-7631	L. Phillips	Robert F. Sanders	1981	H	1060	V	Qal/---
58	4120-7633	L. Nye	do.	1981	H	930	V	Qal/sg
59	4124-7635	Sweet Shop	Richard L. Marsh	1978	H	204D	S	Mb/ss
6D	4125-7635	S. Mattern	do.	1981	H	2040	H	Mb/ss
61	4124-7635	O. Shively	do.	1981	H	204D	S	Mb/ss
62	4125-7631	R. Byrnes	Gordon E. Hill	1976	H	1910	S	MDhm/---
63	4125-7631	W. Hatter	do.	1976	H	1920	S	MOhm/---
64	4124-7635	8. James	Richard L. Marsh	1980	H	2005	S	Mb/---
65	4124-7635	Northern Central 8ank	do.	1978	P	2050	S	Mb/ss
66	4129-7636	H. Cassel	Robert F. Sanders	1981	H	103D	V	Dck/sh
67	4129-7636	L. Antonini	do.	198D	H	1020	V	Dck/---
68	4125-7633	T. Mayes	Richard L. Marsh	1981	H	1745	S	MDhm/ss
69	4125-7629	Laporte 8or.	---	---	P	1760	V	MDhm/---
76	4124-7629	J. Kettelberger	Richard L. Marsh	1978	H	1870	S	MOhm/ss
77	4124-7629	do.	do.	1978	H	1870	S	MOhm/ss
78	4124-7629	S. Williams	C. S. Garber & Sons, Inc.	1974	H	1760	S	MOhm/ss
79	4126-7627	R. Sweigart	Gordon E. Hill	1979	H	1870	S	Mb/---
80	4128-7622	Johnson Shoe Factory	Stanley Thomas	1980	N	1840	S	Mmc/---
81	4128-7627	F. Hochburg	Joseph W. Cummings	1976	H	1920	S	Mb/ss
82	4130-7629	J. Shay	do.	1979	H	1240	S	MOhm/sh
83	4132-7626	R. Lent	Robert F. Sanders	1979	H	1620	H	Dck/---
84	4131-7615	L. Oitzler	do.	1981	H	1360	S	Ock/---
85	4131-7618	D. Gephart	do.	1981	H	2210	H	MDhm/---
86	4133-7621	J. Oe Kunchak	do.	1981	H	1650	S	Ock/sh
87	4132-7621	G. Knouff	do.	1980	H	1710	V	Ock/---
88	4132-7620	G. Brown	so.	1980	H	1790	H	Ock/---
89	4131-7623	E. Murry	Joseph W. Cummings	1975	H	1630	S	Ock/sh
90	4133-7621	R. Reich	Robert F. Sanders	1980	H	1680	S	Ock/---
91	4131-7625	V. Filbers	Joseph W. Cummings	1977	H	1440	S	Ock/ss
101	4132-7642	G. 8atin	Richard L. Marsh	1980	H	1518	S	Ock/---
102	4130-7635	Schantz	do.	1981	H	1060	V	Ock/---
103	4133-7636	C. Berke	do.	1980	H	1690	S	Ock/---
104	4132-7644	Endless Winds Fire Co.	Joseph W. Cummings	1977	F	1685	H	Ock/---
105	4132-7642	O. 8agley	Willard S. Kuser	1980	H	1662	H	Ock/---
106	4133-7640	C. 8aumunk	do.	1980	H	1610	H	Ock/---
107	4130-7639	E. McFarlin	Joseph W. Cummings	1978	H	1095	V	Ock/---
108	4132-7635	O. 8oyd	Richard L. Marsh	1980	H	1680	H	Ock/---
126	4126-7644	F. Novak	do.	1979	H	1425	H	Dlh/sh
127	4127-7641	Little League lnc.	Robert F. Sanders	---	T	92D	S	Dlh/---
128	4128-7641	L. Scheib	Gordon E. Hill	1980	H	940	S	Dlh/sh
129	4128-7641	A. Wissinger	Richard L. Marsh	1980	H	930	V	Olh/---
13D	4126-7642	H. Mertz	do.	1980	H	1120	S	Dlh/ss
131	4126-7642	H. Smith	do.	1980	H	1000	S	Olh/ss
132	4126-7641	A. Lander	do.	1980	H	860	V	Qal/---
								TIOGA
Ti- 1	4145-7733	Ruth Wilson	---	---	U	1290	C	Qal/---
4	4150-7716	M. H. Renken Dairy	Rogers	1932	N	1160	V	Ock/---
5	4159-7718	Elkland Water Co.	Paul H. Cizek	---	Z	1120	V	Qal/---
7	4159-7718	do.	do.	---	P	1140	V	Qal/---
12	4159-7720	Osceola Water Assoc.	---	---	P	1150	V	Qal/---
16	4157-7726	Knoxville 8or. Water Works	---	---	P	123D	V	Qal/---
43	4148-7704	Oairymen's League	William Stothoff Co.	---	N	1140	V	Qal/---
47	4153-7708	Sheffield Farms lnc.	Leon Wood	---	N	1050	V	Olh/---
52	4151-7700	L. P. Wood	do.	---	H	1300	V	Qal/---
61	4155-7732	Eberle Tanning Co.	---	---	N	1390	V	Olh/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
141	39	6	---	60	9/80	10	.13	---	---	---	Po-188
85	51	6	---	40	10/79	40	---	3	180	---	189
55	26	6	---	49	8/78	40	4.4	---	---	---	201
65	31	6	---	---	---	14	---	---	---	---	226
87	27	6	---	F	12/77	36	---	---	---	---	227
63	31	6	38	35	8/79	30	6.0	---	---	---	228
150	71	6	---	80	11/79	20	---	---	---	---	229
80	54	6	---	33	7/81	20	.57	2	50	7.1	230
89	37	6	---	5	11/80	5	.06	---	---	---	231
COUNTY											
52	52	6	---	22	---	50	---	---	---	---	Su- 5
86	33	6	---	45	---	4	---	---	---	---	16
65	10	6	---	14	---	5	---	---	---	---	21
182	---	8	---	96	---	125	11	---	---	---	26
311	39	8	---	9	---	200	13	---	---	---	28
50	34	6	---	25	3/65	---	.12	5	---	---	34
362	33	8	---	---	---	69	---	---	---	---	35
400	---	8	---	---	---	110	---	---	---	---	41
400	---	---	---	---	---	90	---	---	---	---	42
88	48	6	---	67	10/78	5	---	2	125	6.8	43
35	32	6	35	14	9/79	15	3.7	---	---	---	51
41	24	6	40	---	---	5	---	---	---	---	52
40	43	6	---	---	---	30	---	---	---	---	53
120	118	6	42;119	20	5/79	20	.66	---	---	---	54
72	15	6	23;64	---	---	5	---	5	175	7.20	55
40	41	6	---	---	---	50	---	2	65	7.70	56
42	42	6	---	15	1/81	30	---	---	---	---	57
30	30	6	---	13	7/81	40	40	---	---	---	58
255	41	6	240	---	---	15	---	---	---	---	59
355	43	6	250;350	---	---	5	---	---	---	---	60
255	103	6	240	---	---	6	---	---	---	---	61
250	31	6	229	---	---	12	---	---	---	---	62
245	52	6	112;220	---	---	10	---	3	75	7.10	63
135	41	6	110;130	55	9/81	5	---	5	310	7.10	64
255	42	6	240	---	---	15	---	---	---	---	65
75	20	6	---	28	9/81	6	.09	2	70	6.90	66
80	50	6	45;75	11	7/80	8	.11	---	---	---	67
135	36	6	125	---	---	15	---	---	---	---	68
256	7	6	---	---	---	---	---	---	---	---	69
175	41	6	160	---	---	15	---	4	200	---	76
175	42	6	165	---	---	20	---	---	---	---	77
160	100	6	110;150	40	1/74	12	.10	---	---	---	78
125	32	6	72	---	---	6	---	---	---	---	79
420	41	6	160;335	50	8/80	30	---	2	190	---	80
70	30	6	50;64	---	---	10	---	---	---	---	81
220	25	6	160;210	28	8/81	---	---	3	160	7.90	82
171	22	6	165	24	11/79	1	.01	---	---	---	83
86	86	6	86	50	4/81	20	10	---	---	---	84
156	10	6	---	---	---	20	---	---	---	---	85
151	90	6	130;150	55	5/81	5	.05	---	---	---	86
52	35	6	38;50	12	9/81	10	.56	2	105	7.90	87
175	18	6	160	157	9/81	15	---	4	305	7.90	88
240	17	6	180	90	11/75	10	---	---	---	---	89
140	67	6	100;130	55	8/80	2	.02	---	---	---	90
260	20	6	255	---	---	---	---	4	245	---	91
175	20	6	90;115	37	9/81	4	---	5	195	---	101
130	22	6	125	---	---	6	---	---	---	---	102
335	40	6	175;220	88	9/81	2	---	4	195	---	103
214	---	6	200	---	---	15	---	---	---	---	104
470	20	6	---	120	9/80	30	---	3	190	---	105
125	31	6	---	25	6/80	30	---	---	---	---	106
82	20	6	65;75	18	9/78	5	---	---	---	---	107
540	14	6	200	---	---	1	---	---	---	---	108
300	155	6	290	108	8/81	7	---	7	230	---	126
140	67	6	80;135	39	8/81	15	.53	---	---	---	127
195	101	6	168	---	---	5	---	---	---	---	128
64	63	6	20	13	8/81	50	---	3	95	---	129
155	51	6	115	---	---	1	---	---	---	---	130
135	41	6	125;130	---	---	15	---	---	---	---	131
43	42	6	---	---	---	50	---	---	---	---	132
COUNTY											
23	---	30	---	15	8/36	---	---	4	285	6.2	Ti- 1
285	130	8	---	20	---	10	.08	---	---	---	4
107	107	8	---	4	---	45	.15	---	---	---	5
112	112	8	---	31	---	125	23	---	---	---	7
225	225	6	---	---	---	35	---	---	---	7.8	12
100	100	6	---	8	---	25	12.5	---	---	---	16
60	40	10	---	18	---	120	3.7	---	---	---	43
410	40	8	---	20	---	25	.19	---	---	---	47
102	---	6	---	2	---	5	.06	---	---	---	52
78	58	10	---	9	---	600	23.3	---	---	---	61

TABLE 14.

Well location Number	Well location Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ti- 66	4155-7733	Westfield Bor. Water Works	---	1932	P	1370	V	Qal/---
71	4133-7706	East Smithfield Farms Co.	Leon Wood	---	N	1520	V	Dck/ss
86	4140-7715	Wellsboro Water Co. 12	---	1934	P	1735	V	Dck/---
88	4140-7715	Wellsboro Water Co. 10	---	---	P	1785	V	MOhm/---
92	4140-7715	Wellsboro Water Co. 2	---	---	P	1830	V	MOhm/---
100	4145-7733	U. S. Geol. Survey	Germania Well Orilling Co.	1972	U	1310	V	Ock/---
107	4151-7714	J. P. Borden and Son	do.	1970	H	1142	V	Ock/---
108	4159-7708	U. S. Army Corps of Engineers	---	---	U	1020	T	Dlh/---
109	4159-77D9	do.	U. S. Army	1977	U	1000	V	Qal/---
110	4158-7713	do.	do.	1977	U	1110	S	Qal/---
122	4139-7702	8lossburg Water Co. 1	---	---	P	1415	V	MDhm/---
123	4140-7715	Wellsboro Water Co. 3	---	---	U	1840	S	MDhm/---
124	4139-7715	Wellsboro Water Co. 4	---	---	P	1840	S	MDhm/---
125	4139-7715	Wellsboro Water Co. 5	---	---	P	1860	S	MOhm/---
126	4139-7715	Wellsboro Water Co. 6	---	---	P	1795	S	MDhm/---
127	4140-7715	Wellsboro Water Co. 7	---	---	P	1825	S	MDhm/---
128	4140-7715	Wellsboro Water Co. 8	---	---	P	1800	S	MOhm/---
129	4140-7715	Wellsboro Water Co. 9	---	---	U	1825	S	MOhm/---
13D	4140-7715	Wellsboro Water Co. 11	---	---	U	1755	S	MOhm/---
131	4140-7715	Wellsboro Water Co. 13	---	---	P	1700	V	Dck/---
132	4141-7715	Wellsboro Water Co. 14	---	---	P	1675	V	Dck/---
133	4141-7715	Wellsboro Water Co. 15	---	---	P	1650	V	Ock/---
134	4139-7715	Wellsboro Water Co. 17	---	1939	U	2045	S	MOhm/---
135	4140-7716	Wellsboro Water Co. 18	---	1940	U	2160	S	MOhm/---
136	4140-7716	Wellsboro Water Co. 19	Miller	1941	P	2120	S	MDhm/---
137	4139-7715	Wellsboro Water Co. 20	---	1940	P	1830	S	MOhm/---
138	4139-7714	Wellsboro Water Co. 21	---	1940	P	1950	S	Pp/---
139	4139-7714	Wel,sboro Water Co. 22	---	1940	P	1980	S	Pp/---
140	4140-7716	Wellsboro Water Co. 23	Miller	1941	P	1830	V	MOhm/---
141	4139-7715	Wellsboro Water Co. 24	do.	1941	U	1840	S	MDhm/---
142	4142-7713	Wellsboro Water Co. 27	Gifford Voorhees	1947	P	1830	L	Dck/---
144	4155-7733	Westfield 8or. Water 2	Guaranteed Drilling Co.	1953	P	1425	V	Qal/---
145	4154-7707	Tioga Water Works Co. 2	---	1953	P	1D40	V	Qal/---
146	4154-7707	Tioga Water Works Co. 4	---	1963	P	1040	V	Qal/---
149	4159-7719	Elkland Water Dept. 5	---	1934	P	1150	V	Qal/---
150	4159-7719	Elkland Water Dept.	---	1944	U	1140	V	Qal/---
151	4159-7719	Elkland Water Oept. 17	---	---	P	1135	V	Qal/---
152	4159-7719	Elkland Water Oept. 18	---	---	P	1136	V	Qal/---
153	4159-7719	Elkland Water Dept. 24	---	---	P	1133	V	Qal/---
154	4141-7703	8lossburg St. Hosp. 1	---	---	T	1455	S	MDhm/---
155	4141-7704	Blossburg St. Hosp. 2	---	---	T	1455	V	MDhm/---
156	414D-7704	W & K Mfg. Co.	---	---	N	1350	V	MDhm/---
157	4150-7716	Middlebury Milk Plant	Germania Well Drilling Co.	1961	C	1160	V	Dck/---
162	4149-7711	Hills Creek St. Pk.	do.	1962	P	1605	V	Dck/---
163	4148-7711	do.	Theodore R. Wood	1961	H	1595	S	Ock/---
164	4148-7711	do.	do.	1959	P	1530	V	Qal/---
165	4148-7711	do.	do.	1959	P	1510	V	Qal/---
166	4048-7711	do.	do.	1958	P	1520	V	Qal/---
167	4048-7711	do.	do.	1957	H	1525	S	Olh/---
17?	4140-7704	J. P. Ward Foundry	Germania Well Drilling Co.	1974	N	1350	V	Qal/---
173	4143-7705	J. Chase	Roger D. Andrews	1979	H	1300	V	Qal/---
174	4143-77D7	L. Hoar	Germania Well Orilling Co.	1980	H	1535	V	Dck/---
175	4143-7707	R. Baity	do.	1979	H	1470	V	Qal/---
176	4145-7730	Robert Morris	do.	1971	H	1225	F	Dck/sh
177	4145-7731	P. Stoneback	Roger D. Andrews	1979	H	1220	S	Ock/---
178	4145-7733	Tom Eggler	Germania Well Orilling Co.	1975	H	1280	S	Dck/ss
179	4152-7731	O. Robinson	do.	1979	H	1660	F	Qal/---
180	4151-7732	L. 8are	do.	1980	H	1710	S	Olh/ss
181	4152-7730	W. Angel	Walter L. Phillips	1979	H	1921	H	Olh/---
182	4152-7730	R. Bellan	do.	1979	H	1858	V	Olh/---
183	4155-7731	8rookfield Twp. Garage	Rudy W. McLaughlin	1979	---	1365	S	Ock/ss
184	4158-7734	H. Pomnitz	Germania Well Drilling Co.	1979	H	2000	S	Dck/---
185	4158-7734	do.	do.	1979	S	2005	S	Ock/---
186	4156-7734	G. Rumsey	do.	1980	P	1455	V	Dck/ss
187	4156-7734	David Tubbs	Rudy W. McLaughlin	1976	H	1520	H	Qal/---
188	4157-7735	J. Stierly	Walter L. Phillips	1976	H	1690	S	Dlh/ss
189	4156-7734	Penn Jersey Htg.	Germania Well Drilling Co.	1980	H	1580	S	Ock/ss
190	4156-7732	S. R. Jones	do.	1977	H	1815	S	Ock/ss
191	4144-7725	8ur. of Forestry	Oonald K. Havens	---	P	2140	F	Qal/---
192	4145-7728	E. McCarthy	Germania Well Orilling Co.	1979	P	1280	F	Ock/ss
193	4145-7728	do.	do.	1979	P	1280	F	Ock/ss
194	4145-7733	R. Edwards	do.	1980	H	1285	F	Dck/---
195	4151-7732	J. Wanner	do.	1980	H	1920	H	Dlh/---
196	4151-7735	R. Trowbridge	do.	1980	H	2045	S	Dlh/---
197	4154-7734	Ray Harley	Rudy W. McLaughlin	---	H	1500	S	Dlh/ss
198	4158-7733	Oaniel Haskins	Germania Well Orilling Co.	1975	H	1790	V	Dck/ss

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
78	78	8	---	4	---	80	3.2	---	---	---	Ti- 66
200	40	8	---	18	---	50	1.2	---	---	---	71
450	35	6	---	4	---	82	3.28	---	---	---	86
403	25	6	---	6	---	184	15.3	---	---	---	88
468	---	8	---	---	---	35	1.0	---	---	---	92
77	67	6	---	36	9/72	2	.27	---	320	---	100
170	170	6	---	---	---	---	---	3	1020	8.2	107
102	75	6	---	17	5/77	10	.25	---	---	---	108
17	19	6	---	6	6/77	---	---	---	---	---	109
33	33	6	---	3	9/77	---	---	---	---	---	110
177	---	12	---	F	---	310	6.6	---	---	---	122
230	---	8	---	10	---	14	---	---	---	---	123
502	---	---	70;238	79	---	80	2.8	---	---	---	124
300	25	6	---	105	---	22	.5	---	---	---	125
250	35	6	---	79	---	78	16	---	---	---	126
371	20	6	---	56	---	62	4	---	---	---	127
399	35	6	---	74	---	67	4.8	---	---	---	128
450	20	6	---	56	---	---	---	---	---	---	129
450	40	6	---	59	---	55	1.7	---	---	---	130
450	---	8	---	50	---	42	.8	---	---	---	131
450	40	8	---	67	---	41	6.8	---	---	---	132
450	20	8	---	70	---	48	3	---	---	---	133
504	32	---	---	---	---	---	---	---	---	---	134
370	32	---	---	---	---	---	---	---	---	---	135
531	26	8	---	---	---	---	---	---	---	---	136
551	24	8	---	---	---	100	.5	---	---	---	137
549	39	8	---	---	---	---	---	---	---	---	138
552	49	8	---	---	---	60	---	---	---	---	139
571	16	---	---	---	---	60	---	---	---	---	140
550	36	8	---	---	---	---	---	---	---	---	141
505	35	8	---	0	---	250	5.0	---	---	---	142
78	78	8	---	7	---	486	34.7	---	---	---	144
15	8	10	---	F	---	---	---	---	---	6.2	145
19	---	8	---	---	---	12	---	---	---	6.3	146
29	---	96	---	---	---	80	---	---	---	---	149
22	---	---	---	---	---	---	---	---	---	---	150
99	97	8	---	12	---	210	5.2	---	---	8.3	151
109	109	6	---	---	---	130	---	---	---	8.1	152
82	63	12	54	10	---	530	28	---	---	7.7	153
390	27	8	---	10	---	80	.5	---	---	7.5	154
295	---	---	---	36	---	73	---	---	---	7.2	155
120	100	6	---	---	---	280	---	---	---	6.5	156
107	---	10	---	28	---	100	---	---	---	---	157
305	---	---	---	94	---	5	.025	---	---	7.8	162
134	99	6	134	20	1/61	12	.31	---	---	---	163
72	69	6	---	14	6/59	15	.31	---	---	---	164
84	83	6	---	73	---	40	5.0	---	---	---	165
91	91	6	---	89	---	45	5.6	---	---	---	166
134	130	6	134	37	9/57	8	.08	---	---	---	167
101	106	6	62;80;95;100	---	---	200	---	---	---	---	172
43	41	6	30;41	F	7/81	30	---	11	430	6.8	173
115	72	6	95	19	7/81	40	---	5	225	6.9	174
74	72	6	---	F	2/79	10	---	---	---	---	175
63	24	6	---	---	---	12	---	---	---	---	176
87	27	6	82	---	---	20	---	---	---	---	177
67	39	6	---	19	7/81	6	---	---	---	---	178
94	96	6	---	74	10/79	9	.13	---	---	---	179
115	102	6	---	9	7/81	50	---	---	---	---	180
233	20	6	160;228	140	4/79	6	.3	---	---	---	181
93	20	6	89	19	7/81	15	1.5	11	305	---	182
105	75	6	100	F	---	---	---	---	---	---	183
171	13	6	---	60	3/79	36	1.5	14	415	---	184
160	22	6	---	103	7/81	20	.24	16	450	---	185
142	67	6	---	0	10/80	12	.88	6	590	---	186
77	77	6	---	---	---	---	---	---	---	---	187
134	111	6	120	70	9/76	8	.16	17	500	---	188
102	85	6	---	52	7/80	3	3	---	---	---	189
245	33	6	---	---	---	15	---	---	---	---	190
100	100	6	---	4	---	32	21.3	6	190	---	191
95	38	6	50;70;88;95	49	7/81	10	.25	10	270	---	192
76	32	6	---	55	7/81	30	3	6	195	---	193
150	---	6	---	80	10/80	20	---	---	---	---	194
170	32	6	---	100	3/80	40	---	9	270	---	195
88	20	6	---	22	7/81	54	13.5	9	280	---	196
75	35	6	71	---	---	---	---	---	---	---	197
87	66	6	---	2	7/81	8	---	14	350	---	198

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ti-199	4159-7734	V. Good	Rudy W. McLaughlin	1979	S	2040	H	Dck/---
200	4159-7735	E. Collins	do.	1979	H	2015	S	Dlh/---
201	4140-7732	L. Zimmerman	Germania Well Drilling Co.	1977	H	1605	S	Dck/---
202	4144-7719	D. Horton	Roger D. Andrews	1979	H	1500	S	Dlh/sh
203	4144-7719	L. Bingaman	Germania Well Drilling Co.	1980	H	1655	S	Dck/---
204	4144-7721	Lee Strange	Burgess Well Drilling	1976	H	1865	H	Dck/---
205	4144-7721	R. Hazelton	Roger D. Andrews	1980	H	1845	H	Dck/sh
206	4144-7721	Ronald Weller	Germania Well Drilling Co.	1975	H	1740	S	Dck/sh
207	4143-7721	B. Hash	Roger D. Andrews	1979	H	1750	S	Qal/---
208	4140-7719	J. Shabolski	Germania Well Drilling Co.	1979	H	1665	S	Dck/---
209	4140-7719	F. Clark	do.	1980	H	1650	S	Dck/---
210	4143-7718	K. Wilson	Roger D. Andrews	1979	H	1830	H	Dck/sh
211	4153-7731	Eugene Walker	Germania Well Drilling Co.	1974	H	1600	S	Dlh/ss
212	4157-7726	Knoxville Bor. Water Works	---	1976	P	1235	V	Dlh/---
213	4159-7720	Osceola Water Assoc.	Germania Well Drilling Co.	1966	P	1168	---	Qal/---
214	4159-7707	Lawrenceville Water Authority	Layne-New York Co., Inc.	1974	P	990	V	Qal/---
215	4159-7706	do.	do.	1974	P	990	V	Qal/---
217	4155-7732	Eberle Tanning Co.	---	---	C	1320	V	Qal/---
218	4155-7732	do.	---	---	C	1320	V	Dlh/---
226	4155-7705	J. Howe	Roger D. Andrews	1980	H	1410	S	Dlh/sh
227	4152-7706	B. Hughes	Burgess Well Drilling	1978	H	1060	V	Qal/---
228	4157-7706	L. Martin	Germania Well Drilling Co.	1979	H	1020	V	Dlh/---
229	4159-7705	Gary Archer	Rudy W. McLaughlin	1979	H	1500	S	Dlh/ss
230	4158-7704	Charles Miller	Roger D. Andrews	1975	H	1330	V	Dlh/---
231	4157-7706	W. Frances	do.	1979	H	1000	V	Qal/---
232	4159-7700	S. Middaugh	W. H. Vanderhoof Drilling Co.	1978	H	1800	S	Dlh/sh
233	4158-7659	West Jackson Baptist Ch.	do.	1976	P	1440	V	Dlh/---
234	4155-7659	Jim Rice	James C. Vanderhoof	---	H	1560	S	Dlh/sh
235	4152-7657	B. Baker	Burgess Well Drilling	1978	H	1460	S	Dlh/---
236	4151-7657	I. Webster	Roger D. Andrews	1980	H	1660	S	Dck/sh
237	4151-7657	D. Chamberlain	do.	1980	H	1625	S	Dck/sh
238	4150-7657	C. Thomas	W. H. Vanderhoof Drilling Co.	1978	H	1700	S	Dck/ls
239	4151-7655	D. Rowpp	Roger D. Andrews	1979	H	1640	S	Dck/sh
240	4149-7658	H. Barlett	do.	1980	H	1460	S	Qal/---
241	4148-7659	J. Loomis	Burgess Well Drilling	1978	H	1720	S	Dlh/sh
242	4145-7657	L. Wilkins	do.	1978	H	1620	S	Dck/sh
243	4146-7657	D. Aumick	do.	1978	H	1860	S	Dck/sh
244	4146-7659	D. Ott	Germania Well Drilling Co.	1980	H	1450	S	Dlh/---
245	4145-7657	J. Pollock	Burgess Well Drilling	1978	H	1740	S	Dck/sh
246	4146-7659	J. Valimont	Germania Well Drilling Co.	1981	H	1520	S	Dlh/---
247	4145-7658	C. Krantz	do.	1980	H	1660	S	Dck/---
248	4148-7701	B. Sykora	Roger D. Andrews	1980	H	1460	S	Dlh/---
249	4148-7703	P. Delusa	do.	1979	H	1200	V	Dlh/ls
250	4146-7706	L. Crumb	do.	1980	H	1540	S	Dlh/sh
251	4144-7704	J. Fredrick	Burgess Well Drilling	1978	H	1205	V	Dlh/---
252	4144-7704	Russell Stoudt	Germania Well Drilling Co.	1974	H	1205	V	Dlh/sh
253	4144-7704	John Teed	do.	1974	H	1205	V	Dlh/ss
254	4144-7705	Adams	Roger D. Andrews	1980	H	1205	V	Qal/---
255	4144-7701	C. Oates	do.	1980	H	1660	S	Dck/---
256	4150-7716	V. Calvario	Germania Well Drilling Co.	1979	H	1141	V	Dck/---
257	4150-7716	D. Stanford	Roger D. Andrews	1979	H	1140	V	Dck/---
258	4151-7718	G. Sassaman	do.	1979	H	1210	V	Dck/---
259	4149-7719	F. Olshefski	do.	1979	H	1405	S	MDhm/---
260	4145-7715	Robert Townsend	do.	1974	H	1630	S	Dlh/---
261	4144-7715	C. Osgood	do.	1980	S	1630	S	Dlh/---
262	4146-7717	M. Gross	Germania Well Drilling Co.	1979	H	1465	S	Dlh/---
263	4147-7718	R. Dilley	do.	1980	H	1210	S	Dlh/---
264	4146-7721	Marsh Creek Ch.	Roger D. Andrews	1978	P	1150	V	Qal/---
265	4142-7702	M. Fishel	Burgess Well Drilling	1978	H	1875	S	Mb/---
266	4142-7702	P. Bogaczyk	do.	1978	H	1905	V	Mb/---
267	4142-7702	T. Phinney	do.	1978	H	1880	V	Mb/---
268	4145-7725	W. Bloekwen	Roger D. Andrews	1980	H	1155	V	Qal/---
269	4146-7723	U. S. Dept. of Interior	Layne-New York Co., Inc.	1977	S	1158	V	Qal/---
270	4146-7723	do.	do.	1977	H	1166	V	Qal/---
271	4146-7723	do.	do.	1977	S	1168	V	Qal/---
272	4146-7723	do.	do.	1977	S	1160	V	Qal/---
273	4150-7728	N. Harris	Roger D. Andrews	1980	H	2080	S	MDhm/---
274	4151-7724	Kevin Carpenter	Rudy W. McLaughlin	---	H	1555	V	Qal/---
275	4149-7712	J. Hill	Roger D. Andrews	1979	H	1620	S	Dck/---
276	4157-7720	Mike Kohut	Lyle Mather	1979	H	1690	S	Dck/sh

(CONTINUED)

Total depth below land surface (feet)	Casing Depth (feet)	Casing Diameter (inches)	Depth(s) to water-bearing zone(s) (feet)	Static water level: Depth below land surface (feet)	Static water level: Date measured (mo/yr)	Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hardness (gpg)	Specific conductance (micromhos at 25°C)	pH	Well number
168	10	6	140;158	58	7/81	6	---	17	405	---	Ti-199
133	37	6	130	40	9/79	---	---	19	425	---	200
63	21	6	57	46	6/77	21	---	---	---	---	201
54	17	6	15;45	41	7/81	14	---	1	600	---	202
203	25	6	---	52	7/81	20	.15	9	410	---	203
117	33	6	80;102	40	11/76	5	---	8	350	---	204
147	26	6	55;140	---	---	6	---	---	---	---	205
198	25	6	---	---	---	8	---	---	---	---	206
50	50	6	---	---	---	18	---	---	---	---	207
79	72	6	---	74	11/79	126	---	---	---	---	208
114	26	6	---	5	10/80	10	.11	---	---	---	209
126	62	6	60;120	---	---	20	---	---	---	---	210
93	22	6	---	---	---	15	---	---	---	---	211
165	---	8	---	---	---	72	---	---	---	---	212
217	196	8	---	---	---	350	---	---	---	---	213
30	12	12	---	12	6/74	130	18	---	---	---	214
33	14	12	---	11	6/74	133	18	---	---	---	215
69	69	10	---	9	---	---	---	---	---	---	217
154	---	10	---	20	2/71	490	14	---	---	7.5	218
211	14	6	120;200	---	---	5	---	---	---	---	226
55	60	6	---	20	8/78	20	---	---	---	---	227
137	141	6	---	120	11/79	5	.30	---	---	---	228
128	9	6	125	74	7/81	---	---	6	250	8.1	229
162	120	6	120,155	---	---	7	---	---	---	---	230
75	76	6	---	---	---	10	---	---	---	---	231
240	32	6	150;230	165	5/78	10	---	---	---	---	232
140	96	6	139	0	9/76	7	---	---	---	---	233
115	75	6	115	---	---	12	---	6	605	7.4	234
82	47	6	60;73	0	11/78	5	---	---	---	---	235
185	12	6	100;180	---	---	6	---	9	380	8.0	236
138	96	6	---	---	---	5	---	---	---	---	237
117	21	6	114	90	10/78	20	---	---	---	---	238
85	72	6	70	---	---	20	---	---	---	---	239
61	61	6	---	---	---	7	---	---	---	---	240
82	18	6	60;75	0	8/78	12	---	---	---	---	241
112	68	6	72;95;110	100	7/78	12	---	---	---	---	242
183	37	6	60;70;130	100	8/78	2	---	---	---	---	243
106	36	6	---	40	9/80	4	.06	---	---	---	244
230	12	6	70;160;195; 225	112	7/81	8	---	4	200	7.7	245
221	203	6	---	70	7/81	9	---	6	580	7.4	246
202	54	6	---	60	12/80	12	.09	---	---	---	247
75	47	6	45;71	6	7/81	11	---	9	390	---	248
110	31	6	28;90	12	7/81	14	---	---	---	---	249
68	19	6	30;60	---	---	72	---	---	---	---	250
92	85	6	77;90	70	8/78	14	---	---	---	---	251
109	76	6	---	13	7/81	15	---	5	525	7.2	252
125	95	6	---	15	7/81	15	---	7	625	7.0	253
85	85	6	---	6	7/81	10	---	9	565	6.7	254
147	14	6	140	---	---	6	---	---	---	---	255
195	183	6	---	---	---	10	---	---	---	---	256
220	161	6	30;161;215	16	7/81	30	---	5	915	6.6	257
100	23	6	25;85	12	7/81	2	---	2	540	7.0	258
196	195	6	100;195	---	---	10	---	4	380	6.3	259
117	30	6	50;112	---	---	5	---	10	350	7.3	260
104	46	6	47;96	16	7/81	5	---	6	225	---	261
155	32	6	120;137	41	7/81	15	---	9	625	6.9	262
111	100	6	---	50	2/80	20	---	---	---	---	263
36	37	6	---	15	7/81	8	---	6	190	6.6	264
90	42	6	60;75	33	7/81	35	---	5	140	7.0	265
100	42	6	60;80;90; 100	80	10/78	20	---	---	---	---	266
90	29	6	30;45	18	4/78	50	.19	---	---	---	267
31	28	6	---	---	---	30	---	2	55	7.7	268
93	93	14	---	4	7/77	1000	23.3	---	---	---	269
96	96	14	---	9.5	8/77	200	7.2	---	---	---	270
97	97	14	---	14	9/77	1000	21.3	---	---	---	271
88	88	14	---	5	10/77	1000	18.2	---	---	---	272
144	34	6	100;134	---	---	3	---	---	---	---	273
56	56	6	---	0	---	---	---	---	---	---	274
183	27	6	70;176	49	7/81	10	---	3	105	7.5	275
65	20	6	60	0	2/79	30	1.0	---	---	---	276

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ti-277	4157-7721	Ralph Mattison	Germania Well Drilling Co.	1972	H	1595	S	Dck/sh
278	4158-7720	Gene Stewart	Rudy W. McLaughlin	1979	H	1441	V	Qal/---
279	4157-7721	E. Rank	Roger D. Andrews	1979	H	1675	S	Dck/---
280	4157-7721	F. Allen	Germania Well Drilling Co.	1979	H	1645	S	Dck/---
281	4153-7725	G. Barr	do.	1979	H	2025	H	Dlh/ss
282	4153-7722	A. Heek	Roger D. Andrews	1979	H	1790	H	Dlh/sh
283	4155-7725	Henry Whittaker	Germania Well Drilling Co.	1972	H	1710	S	Dlh/sh
284	4156-7724	Marion Newberry	Rudy W. McLaughlin	1976	H	1360	V	Qal/---
285	4159-7729	William Hansel	Germania Well Drilling Co.	1973	H	1330	V	Dlh/sh
286	4159-7729	David Grist	Rudy W. McLaughlin	1978	H	1380	V	Dlh/---
287	4156-7728	Robert Lantergrove	do.	1979	H	1340	S	Dck/sh
288	4153-7728	Richard Cahill	Germania Well Drilling Co.	---	H	1820	S	Dlh/---
289	4153-7729	Ronald Taft	Rudy W. McLaughlin	1979	H	1590	S	Dlh/---
290	4157-7728	John Plummer	do.	---	H	1600	S	Dck/---
291	4156-7729	Carol Bieser	do.	1979	H	1300	V	Qal/---
292	4158-7708	Duane Wheeler	Willard T. Neff	1974	H	1460	H	Dlh/sh
293	4158-7714	Terry Hackett	Rudy W. McLaughlin	1979	H	1115	S	Dlh/ss
294	4159-7709	Lane Constr.	Roger D. Andrews	1979	P	1015	V	Dlh/sh
295	4159-7709	U. S. Corps of Engineers	Pennsylvania Drilling Co.	1979	---	1015	V	Dlh/---
298	4159-7709	do.	do.	1979	---	1015	V	Dlh/---
301	4142-7718	B. Steven	Roger D. Andrews	1980	H	1945	H	Dck/sh
302	4141-7716	H. Johnston	do.	1979	H	1864	S	Dck/sh
303	4143-7716	J. Fishlev	do.	1978	H	1795	S	Dck/sh
304	4143-7716	J. Capriotti	Germania Well Drilling Co.	1980	H	1795	S	Dck/---
305	4143-7715	S. Korenhiewicz	Roger D. Andrews	1980	H	1820	S	Dck/sh
306	4141-7710	Viking Camp	do.	1978	H	1980	S	Pp/sh
307	4142-7710	R. Knowlton	do.	1979	H	2120	S	MDhm/sh
308	4144-7707	R. Dalton	---	1976	H	1840	H	Dck/---
309	4144-7707	do.	Roger D. Andrews	1979	H	1820	H	Dck/sh
310	4144-7713	D. Abplanalp	do.	1979	H	1835	S	Dck/sh
311	4144-7713	Thomas Comfort	do.	1975	H	1780	S	Dlh/---
312	4141-7714	F. Priset	do.	1979	H	1880	S	Dck/sh
313	4143-7711	William Driscoll	do.	1974	H	1655	S	Dck/sh
314	4143-7710	G. Gray	do.	1979	H	1520	V	Dck/sh
315	4141-7724	J. Freed	do.	1979	H	1865	S	Qal/---
316	4141-7726	W. Henninger	do.	1980	H	1730	V	Qal/---
317	4139-7725	P. Anthony	do.	1979	H	1860	S	Dck/sh
318	4138-7725	M. Putman	do.	1980	H	1730	S	Dck/sh
319	4138-7722	A. Worthington	do.	1979	H	1560	S	Dck/---
320	4140-7726	M. Bowser	do.	1979	H	1805	S	Dck/sh
321	4144-7726	Pa. Bur. of Forestry	---	1979	P	1205	S	Dck/sh
322	4144-7726	Bur. of Forestry	---	1980	---	1190	S	Dck/sh
323	4144-7725	Frank Venkeli	Germania Well Drilling Co.	1975	H	1115	V	Dlh/---
326	4146-7704	R. Parthemer	Roger D. Andrews	1980	H	1280	S	Dlh/sh
327	4146-7706	Leroy Wilson	Germania Well Drilling Co.	1976	H	1500	S	Dlh/ss
328	4147-7705	Larry Nesbit	Roger D. Andrews	1974	H	1540	S	Dlh/---
329	4147-7706	C. Klinger	Germania Well Drilling Co.	1979	H	1575	S	Dlh/sh
330	4149-7701	A. Burt	Roger D. Andrews	1979	H	1820	S	Dck/ls
331	4150-7700	I. Webster	do.	1980	H	1380	S	Dlh/---
332	4152-7700	William Kennedy	William P. Shutkufski	1975	H	1340	V	Dck/sh
333	4150-7703	J. Nalley	Roger D. Andrews	1979	H	1380	S	Dck/sh
334	4146-7708	A. Boyce	Burgess Well Drilling	1978	H	1340	V	Qal/---
335	4146-7705	J. Weiskopff	Germania Well Drilling Co.	1979	H	1580	V	Dlh/ss
336	4151-7659	G. Wood	do.	1981	S	1740	S	Dck/---
337	4148-7700	B. Nance	do.	1981	S	1580	S	Dlh/---
338	4147-7702	Anthony Fiamiago	Burgess Well Drilling	1977	H	1340	V	Dlh/ss
339	4159-7656	Vincent Taglialavore	W. H. Vanderhoof Drilling Co.	1975	H	1680	H	Dlh/ss
340	4159-7656	Karl Simmons	do.	1975	H	1680	H	Dlh/ss
341	4200-7656	Tom Norconk	do.	1975	H	1600	H	Dlh/ss
342	4150-7705	H. Wilson	Roger D. Andrews	1978	H	1180	S	Dlh/sh
343	4146-7704	R. Evans	do.	1979	N	1160	V	Qal/---
350	4149-7711	K. Patterson	do.	1979	H	1680	S	Dck/---
351	4149-7711	J. Keller	Germania Well Drilling Co.	1980	H	1670	S	Dck/---
352	4148-7712	D. Garrison	New Way Drilling Inc.	1978	H	1575	S	Dck/---
353	4148-7708	B. Sargent	Burgess Well Drilling	1978	H	1725	S	Dlh/---
354	4147-7707	D. Greer	do.	1978	H	1760	H	Dlh/---
355	4147-7709	J. Riepple	Roger D. Andrews	1980	S	1630	H	Dlh/---
356	4146-7708	M. Cumming	do.	1980	H	1365	V	Dlh/---
357	4146-7709	T. Montgomery	Burgess Well Drilling	1978	P	1380	V	Dlh/---
358	4146-7708	D. Burgess	do.	1979	H	1380	V	Qal/---
359	4145-7710	G. Cupp	Roger D. Andrews	1979	H	1680	S	Dck/---
360	4145-7713	T. Anderson	do.	1979	H	1695	H	Dlh/---
361	4145-7714	W. Goodrich	do.	1978	H	1485	H	Dlh/---
362	4146-7712	D. Cavanaugh	do.	1979	H	1680	V	Dlh/---
363	4147-7712	W. Bradley	do.	1979	H	1525	V	Dlh/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
75	21	6	66	38	7/81	12	---	---	---	---	Ti-277
99	99	6	---	9	7/81	---	---	5	540	---	278
196	50	6	---	---	---	20	---	15	320	---	279
99	20	6	---	20	3/79	12	1.2	---	---	---	280
283	36	6	155	131	7/79	23	1.1	---	---	---	281
95	27	6	44;88	---	---	8	---	---	---	---	282
120	21	6	---	---	---	10	---	---	---	---	283
89	89	6	---	20	7/81	10	---	---	---	---	284
87	81	6	---	---	---	10	---	12	325	---	285
96	77	6	---	26	8/79	---	---	---	---	---	286
100	25	6	98	25	4/79	---	---	8	180	---	287
370	15	6	---	---	---	2	---	---	---	---	288
63	42	6	61	16	7/81	---	---	11	350	---	289
180	29	6	---	---	---	---	---	---	---	---	290
73	73	6	---	5	3/79	---	---	---	---	---	291
300	23	6	110;240	---	---	1	---	2	295	---	292
62	26	6	60	23	7/81	---	---	14	325	---	293
99	65	6	12;56;95	8	11/79	5	---	---	1300	---	294
61	22	6	---	2	7/81	---	---	---	---	---	295
61	27	6	---	9	7/81	---	---	---	---	---	298
205	27	6	80;196	---	---	9	---	---	---	---	301
147	34	6	60;142	---	---	5	---	---	---	---	302
99	61	6	50;94	---	---	10	---	---	---	---	303
375	41	6	195;310	140	11/80	7	.03	---	---	---	304
305	20	6	110;295	---	---	4	---	---	---	---	305
78	35	6	72	---	---	6	---	---	---	---	306
224	19	6	160;219	---	---	4	---	---	---	---	307
220	15	6	---	---	---	5	---	6	310	7.5	308
291	14	6	140;185	---	---	20	---	8	380	7.5	309
150	39	6	36;140	63	7/81	4	---	8	380	7.6	310
146	18	6	30;140	50	3/75	10	---	8	400	7.9	311
236	26	6	80;230	---	---	10	---	---	---	---	312
52	35	6	35;45	---	---	30	---	---	---	---	313
71	40	6	66	---	---	20	---	---	---	---	314
27	27	6	---	---	---	5	---	---	---	---	315
30	31	6	---	8	7/81	10	---	5	140	7.5	316
223	36	6	120;215	---	---	4	---	---	---	---	317
60	44	6	40;52	---	---	20	---	---	---	---	318
250	18	6	110;245	---	---	8	---	---	---	---	319
153	39	6	70;143	---	---	12	---	---	---	---	320
309	40	6	117;242	82	6/79	3	---	1	560	7.6	321
309	31	6	180;260	122	6/80	2	---	---	---	---	322
35	34	6	---	---	---	35	---	---	---	---	323
156	103	6	108;150	---	---	8	---	---	---	---	326
162	117	6	---	47	7/81	20	---	12	500	---	327
133	21	6	97;126	---	---	7	---	8	360	---	328
137	68	6	---	55	8/79	20	.64	---	---	---	329
215	20	6	115;210	---	---	22	---	3	440	---	330
115	75	6	80;110	---	---	7	---	10	825	---	331
122	73	6	100;115	6	5/75	15	---	---	---	---	332
186	120	6	125;181	---	---	4	---	---	---	---	333
111	115	6	---	85	7/78	50	---	---	---	---	334
143	11	6	---	45	11/79	20	1.3	10	450	---	335
467	105	8	---	170	3/81	3	---	7	1000	---	336
140	51	6	105	80	4/81	30	1.0	---	---	---	337
112	100	6	102	38	7/81	8	---	---	---	---	338
118	14	---	114	98	5/75	15	---	7	350	---	339
136	23	6	130	76	8/75	20	---	7	340	---	340
180	20	6	120;173	1	4/75	---	---	---	---	---	341
92	39	6	36;86	19	7/81	8	---	---	---	---	342
11	11	6	---	---	---	6	---	2	280	---	343
207	210	6	200	54	7/81	20	---	5	235	6.5	350
218	128	6	---	74	7/81	40	---	5	230	---	351
180	22	6	180	63	11/78	12	.10	---	---	---	352
104	41	6	80;104	29	7/81	10	---	9	365	6.9	353
208	20	6	100;150;180; 200	50	3/78	50	.60	12	460	---	354
185	22	6	70;179	93	7/81	20	---	12	610	---	355
99	87	6	85;95	2	7/81	7	---	---	---	---	356
92	80	6	---	13	7/81	50	---	10	650	---	357
20	24	6	---	23	3/79	15	---	---	---	---	358
149	93	6	100;145	---	---	18	---	---	---	---	359
51	40	6	40	4	7/81	10	---	9	355	---	360
150	21	6	142	---	---	4	---	---	---	---	361
87	29	6	50;80	---	---	6	---	---	---	---	362
133	81	6	---	7	7/81	8	---	13	560	---	363

TABLE 14.

Well location								
Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Ti-364	4137-7653	John Huzey	Willard S. Kuser	1980	H	1590	S	Dck/---
365	4137-7654	Kenneth Chilson	do.	1974	H	1695	H	Dck/---
366	4136-7654	Keith Fitch	do.	1979	H	1690	S	Dlh/---
367	4134-7659	Richard Roan	do.	1978	H	1550	S	Dlh/---
368	4133-7657	Andrew Yaggie	do.	1978	H	1440	S	Dlh/---
369	4133-7657	Hemlock Ridge	do.	1980	Z	1010	S	Dck/---
370	4133-7657	E. E. Donnelly	do.	1980	Z	1035	S	Dck/---
371	4136-7658	Benny Thompson	do.	1979	H	1790	H	Dck/---
372	4138-7655	Orwell Porter	do.	1981	H	1740	S	Dck/---
373	4135-7655	Dennis McNeth	do.	1978	H	1710	H	Dlh/---
377	4159-7709	U. S. Corps of Engineers	Pennsylvania Drilling Co.	1979	---	1015	V	Dlh/---
380	4159-7713	E. West	Rudy W. McLaughlin	1979	H	1245	S	Dlh/---
381	4159-7713	Haze Colegrove	Lyle Mather	1979	H	1250	S	Dlh/---
382	4154-7708	P. Stone	Roger D. Andrews	1979	H	1035	V	Dlh/---
383	4154-7708	A. Boracyzk	Burgess Well Drilling	1978	H	1060	S	Dlh/ss
384	4155-7712	J. Heek	Roger D. Andrews	1979	H	1505	S	Qal/---
385	4154-7713	E. Buffard	Germania Well Drilling Co.	1980	H	1370	V	Dlh/---
386	4154-7717	J. Fuller	Roger D. Andrews	1980	H	1935	H	Dlh/---
387	4154-7710	W. Osterhoudt	Burgess Well Drilling	1980	H	1280	S	Dlh/sh
388	4135-7717	L. Vroman	Roger D. Andrews	1979	H	1045	V	Qal/---
389	4133-7719	M. Schmech	New Way Drilling Inc.	1980	H	1560	S	Dck/---
390	4133-7717	J. Blackwell	do.	1978	H	1625	S	Dck/ss
391	4133-7715	J. Bondasy	Roger D. Andrews	1978	I	1580	S	Dck/---
392	4133-7712	D. Bohart	Germania Well Drilling Co.	1980	H	1480	V	Dck/---
393	4133-7712	Harry Maneval	do.	1981	H	1465	V	Dck/---
394	4133-7712	C. Kilpatrick	do.	1980	H	1470	S	Dck/---
395	4134-7711	E. Black	do.	1981	H	1540	W	Dck/---
396	4134-7710	Carl Miller	New Way Drilling Inc.	1979	H	1702	S	Dck/---
397	4137-7706	Susquehanna Quarries	C. S. Garber & Sons, Inc.	1973	N	2275	H	MDhm/sh

UNION

Number	Lat-Long	Owner	Driller	Date completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Un- 43	4105-7655	William Devitt	---	1931	H	700	S	Sc/ss
51	4059-7711	U. S. Geol. Survey	R. R. Hornberger	1967	U	1550	V	Or/sh
54	4058-7653	Sheffield Farms, Inc.	---	---	N	470	V	DSkt/---
56	4057-7654	L. P. Ilgin	---	---	C	465	V	Swc/---
58	4057-7653	Plastic Products Co.	---	---	N	460	F	Sc/---
71	4106-7654	Mrs. D. W. Foresman	Wieand Brothers	1974	U	500	S	DSkt/ls
79	4106-7655	Spring Garden Market	---	---	H	485	V	DSkt/ls
117	4101-7652	Herr Welding Supply	Robert H. Zimmerman	1978	N	520	V	Sbm/ls
118	4103-7652	Helm's Trucking	Wieand Brothers	1977	N	500	V	Sbm/ls
119	4103-7651	Gold Bond Bldg. Prod.	Layne-New York Co., Inc.	1968	N	480	V	Sbm/---
120	4103-7651	do.	do.	1968	N	462	V	Sbm/---
121	4103-7651	do.	---	---	N	458	V	Sbm/---
126	4054-7656	R. Moser	Robert H. Zimmerman	1978	H	670	S	Sc/---
127	4055-7654	R. Hamm	do.	1980	H	650	S	Sbm/---
128	4055-7652	T. Mastascusa	do.	1978	H	510	S	Sbm/---
129	4054-7658	E. Siegrist	do.	1978	H	720	S	Sbm/---
130	4054-7658	E. Metzger	do.	1977	H	720	S	Sbm/---
131	4054-7658	P. Zimmerman	do.	1977	S	625	V	Swc/---
132	4056-7655	C. Brown	do.	1979	H	525	V	DSkt/---
133	4057-7657	L. Eberhart	do.	1981	H	530	W	Swc/---
134	4059-7656	H. Day	do.	1979	H	510	S	DSkt/---
135	4059-7655	G. Nogle	do.	1977	H	480	S	DSkt/---
136	4057-7656	A. Weaver	do.	1977	H	495	V	DSkt/---
137	4057-7658	M. Weiser	do.	1977	H	650	H	Swc/---
138	4058-7655	C. Dock	Gilbert R. Zechman	1978	H	540	H	Doo/---
143	4055-7659	P. Reiff	Robert H. Zimmerman	1977	H	655	H	DSkt/---
144	4057-7659	W. Keefer	do.	1979	H	525	V	DSkt/---
145	4059-7653	L. Reed	Gilbert R. Zechman	1980	H	515	W	Doo/---
146	4104-7652	G. Aucker	Robert H. Zimmerman	1977	H	600	S	Sbm/---
147	4101-7658	T. Swank	do.	1980	H	705	H	Sc/---
148	4101-7657	R. Beaver	do.	1977	H	760	H	Sc/---
149	4101-7656	E. Wilhour	do.	1976	H	755	S	Sc/---
150	4101-7656	D. Dieffenbach	do.	1978	H	655	S	Sc/---
154	4054-7704	M. Hoffman	do.	1979	H	580	S	DSkt/ls
155	4055-7704	T. Harvey	do.	1979	H	625	S	Swc/ls
156	4055-7704	R. Galer	do.	1978	H	625	S	Swc/ls
157	4055-7701	Baptist Ch.	do.	1979	H	555	F	DSkt/ls
158	4057-7704	G. Mowery	do.	1979	H	640	S	Sbm/sh
159	4057-7702	M. Shoemaker	do.	1978	H	620	S	Sbm/---
160	4056-7701	G. Kreisher	do.	1979	H	540	V	Swc/---
161	4057-7702	R. Feese	do.	1978	H	580	V	Sbm/sh
162	4059-7701	C. Hulsizer	do.	1979	H	585	S	Sbm/sh
163	4059-7702	R. Criswell	do.	1978	H	630	S	Sc/---
164	4059-7701	K. Kline	Gilbert R. Zechman	1978	H	760	H	Sc/---
165	4058-7702	C. Mabus	Robert H. Zimmerman	1979	H	640	V	Swc/ls
166	4059-7705	P. Maurer	Gilbert R. Zechman	1980	P	885	S	Sc/sh
167	4058-7703	R. Beachy	Robert H. Zimmerman	1978	H	770	S	Sc/---
169	4055-7708	R. Hurst	do.	1978	H	710	S	Sbm/---
170	4056-7707	R. Gilson	Gilbert R. Zechman	1979	H	715	V	Sbm/ls

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
335	20	6	---	78	8/81	4	---	8	310	---	Ti-364
240	17	6	---	23	8/81	8	---	1	495	---	365
220	42	6	---	74	8/81	7	---	---	---	---	366
100	90	6	---	14	7/78	15	---	---	---	---	367
150	23	6	---	17	8/81	30	---	8	435	7.3	368
250	20	6	---	90	9/80	2	---	---	---	---	369
225	20	6	---	50	7/80	3	---	---	---	---	370
225	31	6	---	45	4/79	4	---	---	---	---	371
105	40	6	---	32	8/81	6	---	3	145	---	372
330	22	6	---	270	6/78	10	---	---	---	---	373
34	11	6	---	7	7/81	14	---	---	---	---	377
149	145	6	148	73	7/81	6	.04	17	350	---	380
255	94	6	105;235	55	6/79	4	.02	---	---	---	381
118	100	6	30;52;110	---	---	30	---	---	---	---	382
112	---	6	105	24	5/78	5	---	12	405	---	383
79	79	6	---	---	---	5	---	---	---	---	384
110	99	6	---	25	9/80	12	.16	---	---	---	385
190	35	6	130;180	---	---	7	---	---	---	---	386
110	16	6	30;65;85;100	70	5/78	5	---	---	---	---	387
87	92	6	---	---	---	25	---	---	---	---	388
340	22	6	260	230	4/80	.3	.003	---	---	---	389
240	21	6	218	100	11/78	20	.14	---	---	---	390
71	34	6	64	---	---	9	---	---	---	---	391
39	21	6	---	15	11/80	20	2.2	---	---	---	392
40	35	6	---	7	4/81	15	.45	3	190	---	393
103	29	6	---	40	8/80	60	---	2	195	---	394
59	31	6	---	10	1/81	6	.12	---	---	---	395
200	61	6	140;166;186	70	6/79	8	.06	4	220	---	396
220	44	6	160;205	130	9/73	12	.13	4	110	8.4	397
COUNTY											
205	20	8	---	F	---	13	---	---	---	---	Un- 43
115	94	6	68;105	40	10/67	---	---	---	---	---	51
104	---	6	---	25	---	60	60	---	---	---	54
150	9	8	145	30	---	27	1.8	---	---	---	56
302	50	8	---	15	---	45	---	---	---	---	58
575	180	6	540	20	2/74	305	5.8	87	1800	6.5	71
---	---	6	---	---	---	---	---	13	350	---	79
123	42	6	98	51	10/81	6	---	6	320	7.70	117
209	63	8	94;277	---	---	60	---	---	---	---	118
350	70	10	190	F	7/68	200	1.0	---	---	---	119
330	45	10	52;83;116; 155	26	7/68	300	11	---	---	---	120
358	47	---	137;168;240; 369	26	7/68	250	5.1	---	---	---	121
98	21	6	72	---	---	12	---	---	---	---	126
147	73	6	121	---	---	10	---	---	---	---	127
223	21	6	185;198	52	9/81	7	---	8	255	---	128
148	21	6	122	---	---	15	---	---	---	---	129
165	62	6	112;148	---	---	15	---	---	---	---	130
64	21	6	48	---	---	30	---	---	---	---	131
90	53	6	67	13	9/81	100	---	14	360	---	132
73	15	6	48	---	---	6	---	---	---	---	133
123	20	6	89	---	---	30	---	---	---	---	134
75	61	6	66	---	---	12	---	---	---	---	135
65	22	6	45	8	9/81	30	---	18	440	---	136
165	20	6	146	98	9/81	8	---	10	315	---	137
147	68	6	120;137	94	9/81	10	---	---	---	---	138
225	21	6	148;211	---	---	9	---	20	485	---	143
73	34	6	55	---	---	20	---	---	---	---	144
75	40	6	45;68	20	9/81	15	---	17	380	---	145
290	21	6	130;275	---	---	7	---	7	220	---	146
148	41	6	123	---	---	20	---	---	---	---	147
265	21	6	134;248	---	---	10	---	---	---	---	148
365	29	6	221	---	---	1	---	---	---	---	149
247	40	6	---	---	---	8	---	---	---	---	150
70	55	6	65	---	---	75	---	---	---	---	154
198	40	6	118;161	---	---	12	---	10	290	---	155
148	51	6	122	---	---	12	---	---	---	---	156
73	30	6	48	---	---	10	---	---	---	---	157
173	19	6	93;158	41	9/81	7	---	14	375	---	158
123	20	6	78;105	---	---	8	---	9	300	---	159
73	42	6	60	---	---	60	---	---	---	---	160
123	23	6	71;96	---	---	20	---	---	---	---	161
73	26	6	68	---	---	15	---	---	---	---	162
273	21	6	110	17	9/81	1	---	4	260	---	163
247	41	6	60;120;215; 238	73	9/81	9	---	4	120	---	164
70	54	6	66	---	---	60	---	---	---	---	165
201	80	6	120;135;185	41	9/81	9	---	3	75	---	166
260	20	6	98;235	---	---	40	---	---	---	---	167
120	21	6	---	41	10/81	12	---	---	250	---	169
101	63	6	70;81;94	30	6/79	6	---	---	---	---	170

TABLE 14.

Well location		Owner	Oriller	Oate completed	Use	Altitude of land surface (feet)	Topographic setting	Aquifer/ lithology
Number	Lat-Long							
Un-176	4106-7655	L. Frontz	Robert H. Zimmerman	1974	H	478	V	Swc/---
177	4106-7657	A. Masser	Wieand Brothers	1976	H	518	S	Swc/---
178	4106-7654	P. Smith	Robert H. Zimmerman	1974	H	492	V	Sbm/---
179	4106-7655	A. Witmer	do.	1978	H	495	S	Sbm/---
180	4104-7656	L. Mills	do.	1979	H	670	S	Sc/---
181	4103-7655	J. Oershem	do.	1978	H	705	H	Sbm/---
182	4103-7653	R. Hess	Wieand Brothers	1977	H	585	S	Sbm/---
183	4102-7653	C. Huff	Robert H. Zimmerman	1980	H	660	S	Sbm/---
184	4102-7653	S. Hubble	do.	1978	H	610	H	Swc/---
185	4101-7653	R. Poeth	do.	1980	H	605	W	Sbm/---
186	4100-7655	L. Manning	do.	1980	H	570	H	Sbm/---
187	4130-7654	O. Rearick	Wieand Brothers	1977	H	540	S	Swc/---
188	4101-7654	B. Arnold	Robert H. Zimmerman	1977	H	630	S	Sbm/---
189	4101-7655	J. West	do.	1978	H	470	S	Sbm/---
190	4102-7659	Nittany Mt. Campground	do.	1979	P	730	S	Sc/---
191	4056-7653	Bucknell Univ.	Wieand Brothers	1978	I	498	W	Swc/---
192	4057-7652	Lewisburg Courthouse	do.	1972	P	470	F	DSkt/---
193	4106-7653	Gregg Twp. Authority	---	---	P	460	V	Swc/---

(CONTINUED)

Total depth below land surface (feet)	Casing		Depth(s) to water-bearing zone(s) (feet)	Static water level		Reported yield (gal/min)	Specific capacity ([gal/min]/ft)	Hard-ness (gpg)	Specific conduc-tance (micro-mhos at 25°C)	pH	Well number
	Depth (feet)	Diameter (inches)		Depth below land surface (feet)	Date measured (mo/yr)						
80	32	6	68	---	---	40	---	12	360	---	Un-176
98	38	6	48;76	35	9/81	10	---	14	390	---	177
410	20	6	180	---	---	3	---	6	300	---	178
73	46	6	55	---	---	18	---	---	---	---	179
198	20	6	111;170	---	---	18	---	4	125	---	180
298	31	6	273	---	---	20	---	---	---	---	181
148	20	6	75;127	20	10/77	5	---	---	---	---	182
197	57	6	168	---	---	5	---	---	---	---	183
123	64	6	---	---	---	12	---	---	---	---	184
147	53	6	98;120	50	9/81	50	---	12	350	---	185
226	21	6	110;185	---	---	10	---	9	260	---	186
173	42	6	85;146	---	---	7	---	---	---	---	187
185	24	6	168	---	---	5	---	---	---	---	188
173	21	6	154	---	---	5	---	---	---	---	189
173	41	6	62;128;149	---	---	30	---	---	---	---	190
298	44	6	103;111;173;200	---	---	100	---	---	---	---	191
125	54	6	72;115	---	---	15	---	---	---	---	192
250	---	6	---	---	---	500	---	---	---	---	193

TABLE 15. RECORD OF SPRINGS

Spring location: The number that is assigned to identify the spring. It is prefixed by a two-letter abbreviation of the county. The latitude and longitude (lat-long) are the coordinates (in degrees, minutes, and seconds) of the southeast corner of a 1-minute quadrangle within which the spring is located.

Use: C, commercial; H, household; N, industrial; P, public; S, stock; T, institutional; U, unused; Z, other.

Aquifer: Pcg, Glenshaw Formation; Pa, Allegheny Group; Pp, Pottsville Group; Mmc, Mauch Chunk Formation; Mb, Burgoon Sandstone; MDhm, Huntley Mountain Formation; Dck, Catskill Formation; Dlh, Lock Haven Formation; DSkt, Keyser and Tonoloway Formations, undivided; Sc, Clinton Group; St, Tuscarora Formation; Oj, Juniata Formation; Obe, Bald Eagle Formation; Or, Reedsville Formation; Ocn, Coburn Formation through Nealmont Formation, undivided; Obl, Benner Formation through Loysburg Formation, undivided; Oba, Bellefonte and Axemann Formations, undivided, Obf, Bellefonte Formation; Oa, Axemann Formation; On, Nittany Formation; Cg, Gatesburg Formation.

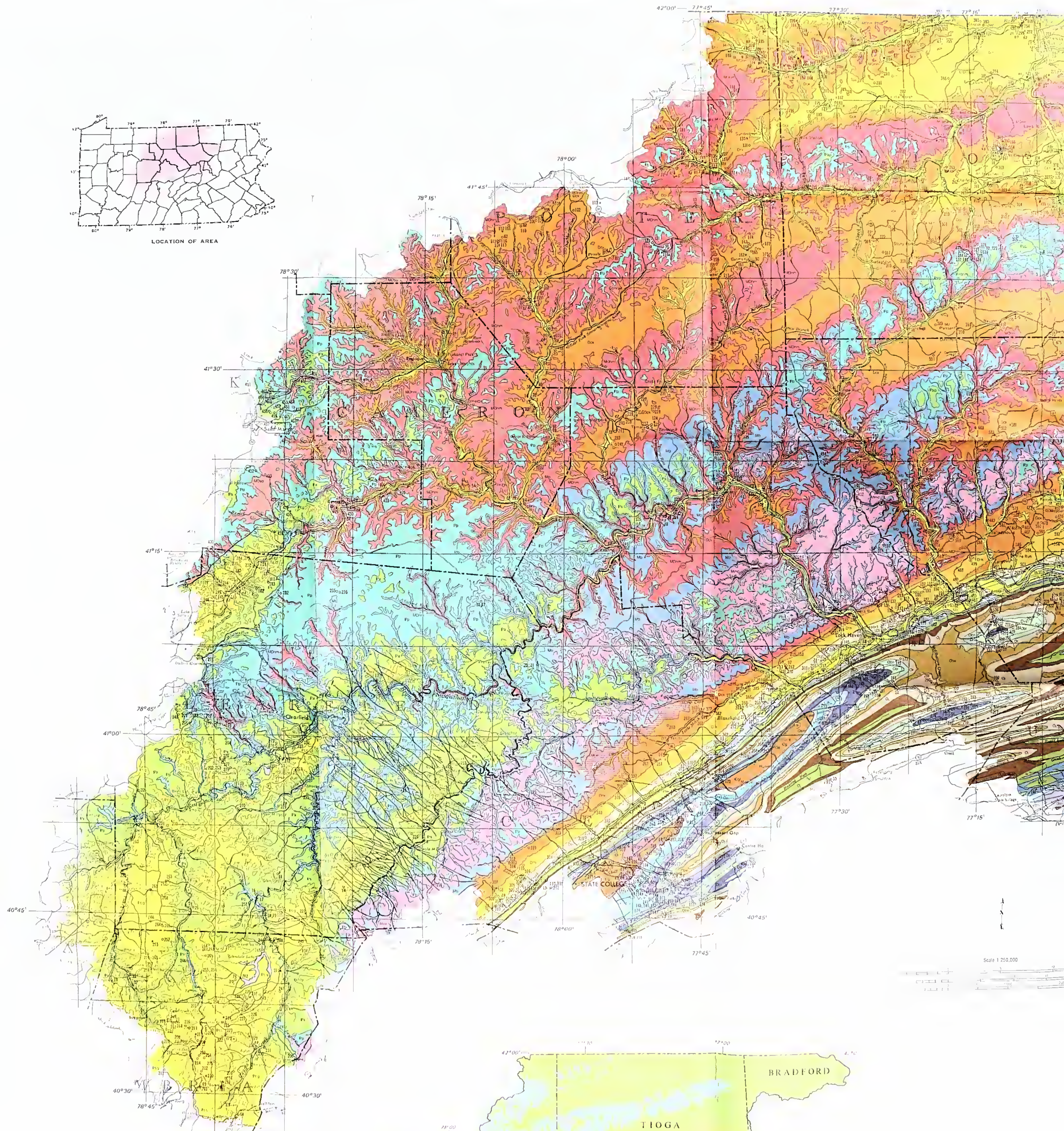
Discharge: E, estimated; M, measured; R, reported.

Spring number	Location (Lat-Long)	Owner/Name of spring	Use	Altitude of land surface (feet)	Aquifer	Discharge (gal/min)	Date	Temperature (°C)
		CAMBRIA COUNTY						
Ca-Sp- 1	403816-783218	J. C. McGough	U	1490	Pcg	---	6/68	11
2	403753-783415	Francis Nagle	H	1490	Pcg	---	6/68	14
3	403902-783555	Andrew Grozanick	H	1570	Pcg	---	6/68	16
		CAMERON COUNTY						
Cm-Sp- 1	412732-780341	Sinnemahoning St. Pk.	U	990	Dck	---	4/68	---
		CENTRE COUNTY						
Ce-Sp- 1	404808-775049	Penn State Univ./Thompson Spring	T	1010	Oa	2700 (M)	11/71	11
2	404844-775031	Lemont Water Co./Bathgate Spring	P	1000	On	540 (M)	11/71	10.5
5	405432-774654	Bellefonte Bor./Big Spring	P,N	740	Oa	7500 (M)	11/71	---
7	405607-773123	Madisonburg Water Co.	P	1440	Obe	---	---	---
8	405420-775133	Unionville Munic. Water	P	1070	DSkt	---	---	---
9	400138-775516	Snow Shoe Water Co.	P	1690	Mmc	300	7/34	---
10	410211-775629	Clarence Water Co.	P	1470	Mb	20 (E)	7/34	11
11	405145-774526	Pa. Fish Comm./Shutgart Spring	Z	900	Obf	2270 (M)	11/71	---
12	405300-774737	Pa. Fish Comm.	Z	820	Cg	3000 (R)	1933	11
13	404746-780243	Port Matilda Water Co.	P	1250	Sc	25 (E)	7/34	9.5
15	404348-775302	Pine Grove Water Co.	P	1400	Obe	120 (E)	7/34	9
16	405248-774740	Bellefonte Fish Hatchery/Paradise Spring	Z	830	Cg	3930 (M)	11/71	10
17	405324-774537	Bond C. White/Axemann Spring	U	840	On	920 (M)	11/71	10
18	405105-774921	Benner Research Stn./Benner Rock Spring	Z	910	Cg	4080 (M)	11/71	10
19	405420-774642	Titan Mfg. Co./Kelly Springs	N	765	On	9600 (M)	11/71	10
20	410602-780243	Pine Glen Dev. Co./Big Sterling Spring	P	1400	Mb	85 (R)	3/56	---
21	410602-780240	Pine Glen Dev. Co./Sterling Spring No. 2	---	1400	Mb	---	---	---
24	405213-772716	---/Coburn Spring	U	1030	Obl	1	7/67	---
27	404851-775020	Lemont Water Co.	P	970	On	---	---	---
28	404544-781412	Oak Ridge Authority/Able Spring	P	1600	MDhm	115	1978	---
29	405608-773122	Madisonburg Water Co.	P	1470	Obe	30 (E)	---	---
30	405607-773117	Madisonburg Water Co.	P	1480	Obe	35 (E)	---	---
		CLEARFIELD COUNTY						
Cf-Sp- 4	404528-783708	C. Conley	H	1840	Pa	5 (E)	6/34	---
5	405733-783636	J. E. Ginter	H	1640	Pa	10 (E)	6/34	11.5
8	405939-781028	United Airlines Inc.	C	1618	Pa	5	7/34	---
9	405952-782153	---/Mineral Spring	U	1410	Pp	---	6/34	11.5
10	405946-782139	Harbison-Walker Co., Inc.	P	1390	Pp	---	6/34	9
11	405545-781705	General Refractories Co.	P	1570	Pp	35 (E)	9/62	12
12	410445-781957	Croft Water Assoc./Croft Spring	P	1220	Pa	10 (E)	4/30	---
13	411326-783152	Tyler Water Line Assoc.	P	1360	Pa	---	---	---
14	404818-783049	Glen Hope Public Water Supply	P	1620	Pa	17.4 (E)	12/68	---
15	405727-781739	Wallaceton Munic. Authority	P	1730	Pp	---	3/65	---
16	410422-783836	Union Twp. Munic. Authority/Brown Spring	P	1610	Mb	---	1/74	---
17	411219-783523	N. Woodward	H	1490	Pcg	---	10/80	9
		CLINTON COUNTY						
Cn-Sp- 1	410126-772130	Boonville Water Co.		1370	Or	---	7/34	---
2	410324-772811	Valley Dairy	H,S	660	Oba	4000 (M)	11/71	9.5
3	410504-772728	Cedar Spring Hatcheries/Big Spring	Z	620	Ocn	4300 (M)	11/71	10
4	410145-771840	John Kemmerer	S	1210	Ocn	300 (E)	7/34	---
5	410225-771828	E. E. Meyer/Sulphur Spring	H	1400	Or	2 (E)	---	10
6	410045-773049	---	H	890	Or	---	---	---
7	410002-775203	U. S. Bur. of Fisheries/Steel Spring	Z	860	Oba	2000 (E)	1933	13.5
8	410059-773150	C. B. Gribe	H	790	Oba	300 (E)	7/34	11
9	405847-772532	Tylersville Mutual Water Assoc.	P	1250	Oj	12 (E)	7/34	11
10	410228-771830	Bor. of Logantown	P	1420	Obe	20 (E)	7/34	11
22	410342-772346	Rote Mutual Water Co.	P	1080	Obe	8 (R)	5/62	---
24	410117-772214	T. Jefferies	H	1400	Or	25 (E)	6/81	9

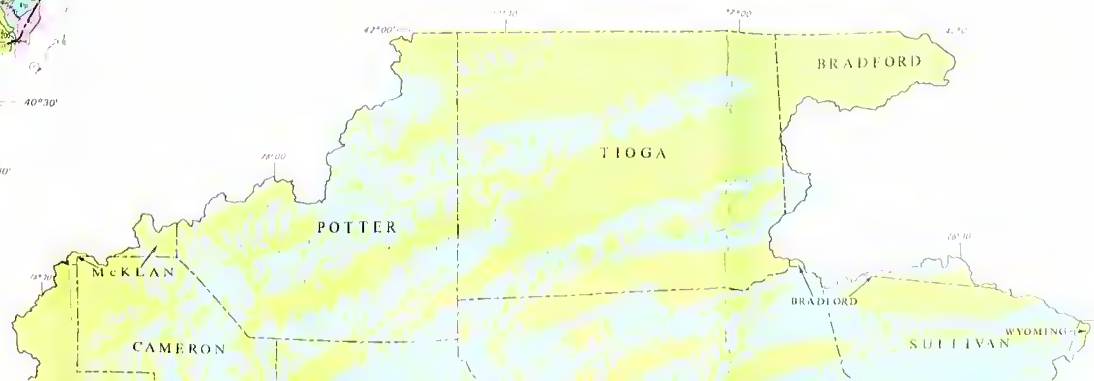
TABLE 15. (CONTINUED)

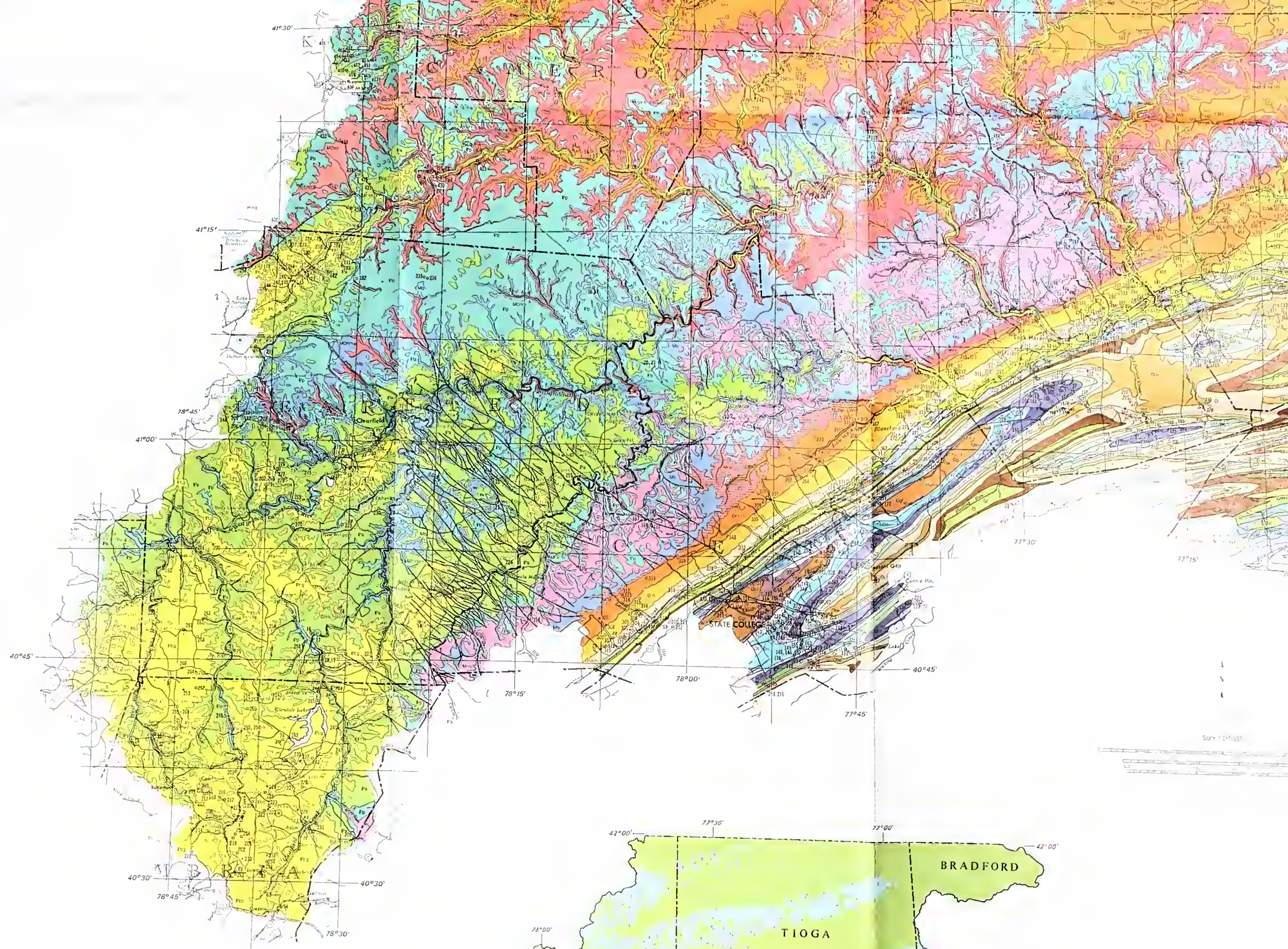
Spring number	Location (Lat-Long)	Owner/Name of spring	Use	Altitude of land surface (feet)	Aquifer	Discharge (gal/min)	Date	Temper-ature (°C)
		ELK COUNTY						
Ek-Sp- 3	412S18-782947	---	H	186S	Pp	S0	7/81	13
		LYCOMING COUNTY						
Ly-Sp- 1	41092S-771313	C. E. Carpenter/Nippeno Spring	U	6S0	Ocn	20000 (M)	---	9
2	411336-76S718	Montoursville Bor./Gibson Hollow Spring	P	8S0	St	200 (E)	2/59	---
3	411342-76S60S	Montoursville 8or.	P	681	St	---	---	---
4	411222-76S017	Pa. St. Corr. Inst.	P	740	Sc	.38(M)	10/63	---
5	411302-7703S1	---	H	S80	Sc	20	10/7S	11
6	411007-7700S6	---	H	1010	St	11	10/7S	10
7	411223-765013	Muncy St. Corr. lnst.	T	76S	St	---	S/69	---
8	411219-76S042	Muncy St. Corr. Inst.	T	8S0	St	---	4/69	---
		NORTHUM8ERLANO COUNTY						
Nu-Sp- 2	400647-76S048	John Tagert/Sinking Springs	H	52S	OSkt	S0-60 (E)	---	11
		POTTER COUNTY						
Po-Sp- 3	4137S9-7801S7	John H. Miller	H	129S	Dck	10	6/81	7
		SULL1VAN COUNTY						
Su-Sp- 1	412S02-7629S0	Laporte 8or. Munic. Water System	P	2020	Mb	10-12 (E)	---	---
2	412500-762952	8ernice Coal Co.	H	2010	Mb	1	---	12
		T1OGA COUNTY						
Ti-Sp- 1	41SS01-773119	Westfield 8or./Pierce Spring	P	1440	Olh	15	10/61	---
2	413949-770726	8loss Twp./South Spring	P	1670	Pp	300	10/63	---
		UN1ON COUNTY						
Un-Sp- 1	40S44S-770330	Mifflinburg Munic. Water Works	P	S80	OSkt	270 (R)	6/S7	11
2	410244-7706SS	---/McKean Spring	H	1174	St	40 (E)	---	10
4	4002S7-770S3S	---/Sand Spring	P	1310	St	60 (E)	---	10
5	40SS18-770231	---/Thompson Spring	---	SS8	OSkt	200 (E)	---	---
7	410249-770839	---/Tea Spring	U	14S0	Obe	4 (E)	8/34	12.S

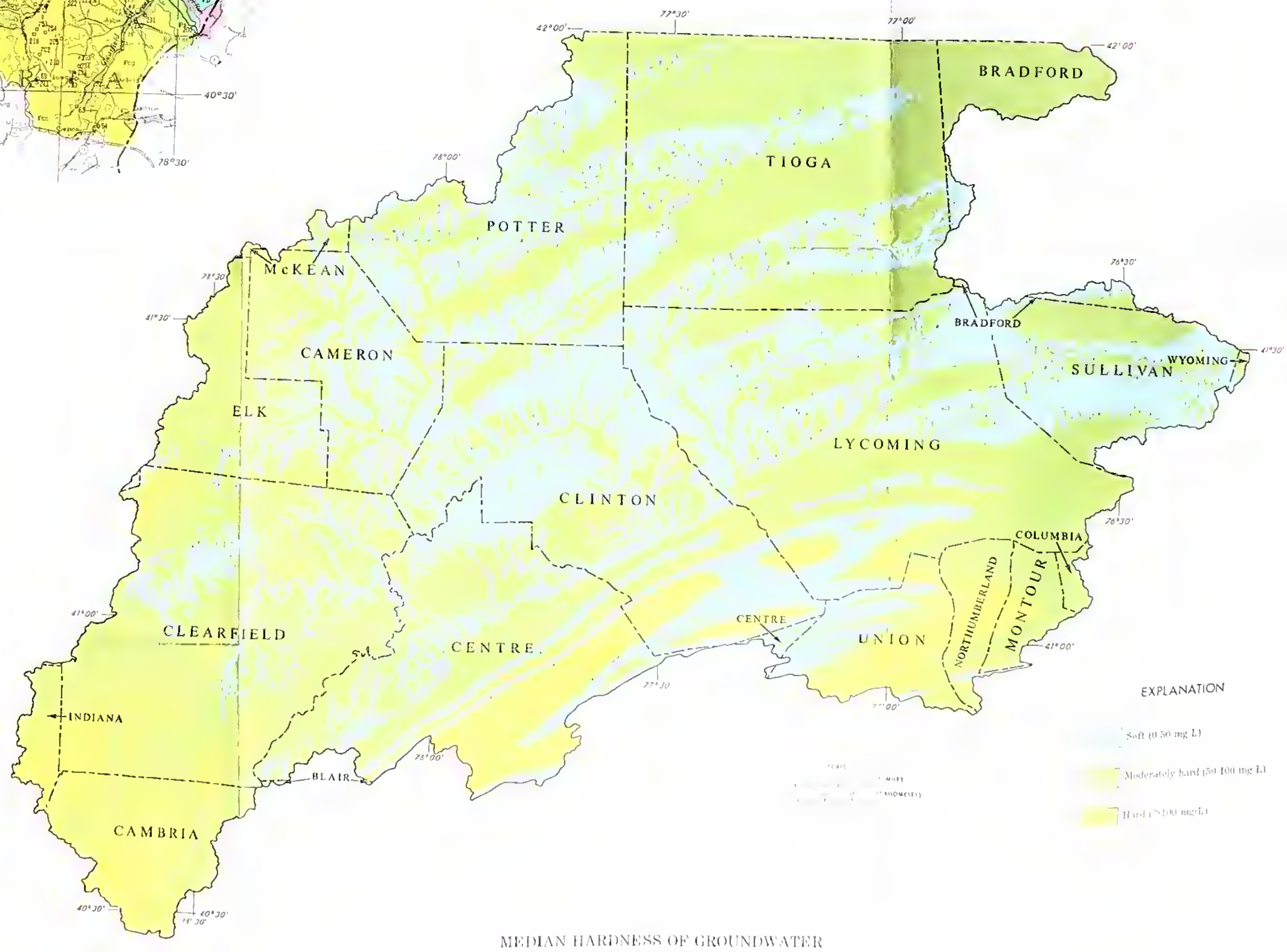
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, *State Geologist*



LOCATION OF AREA

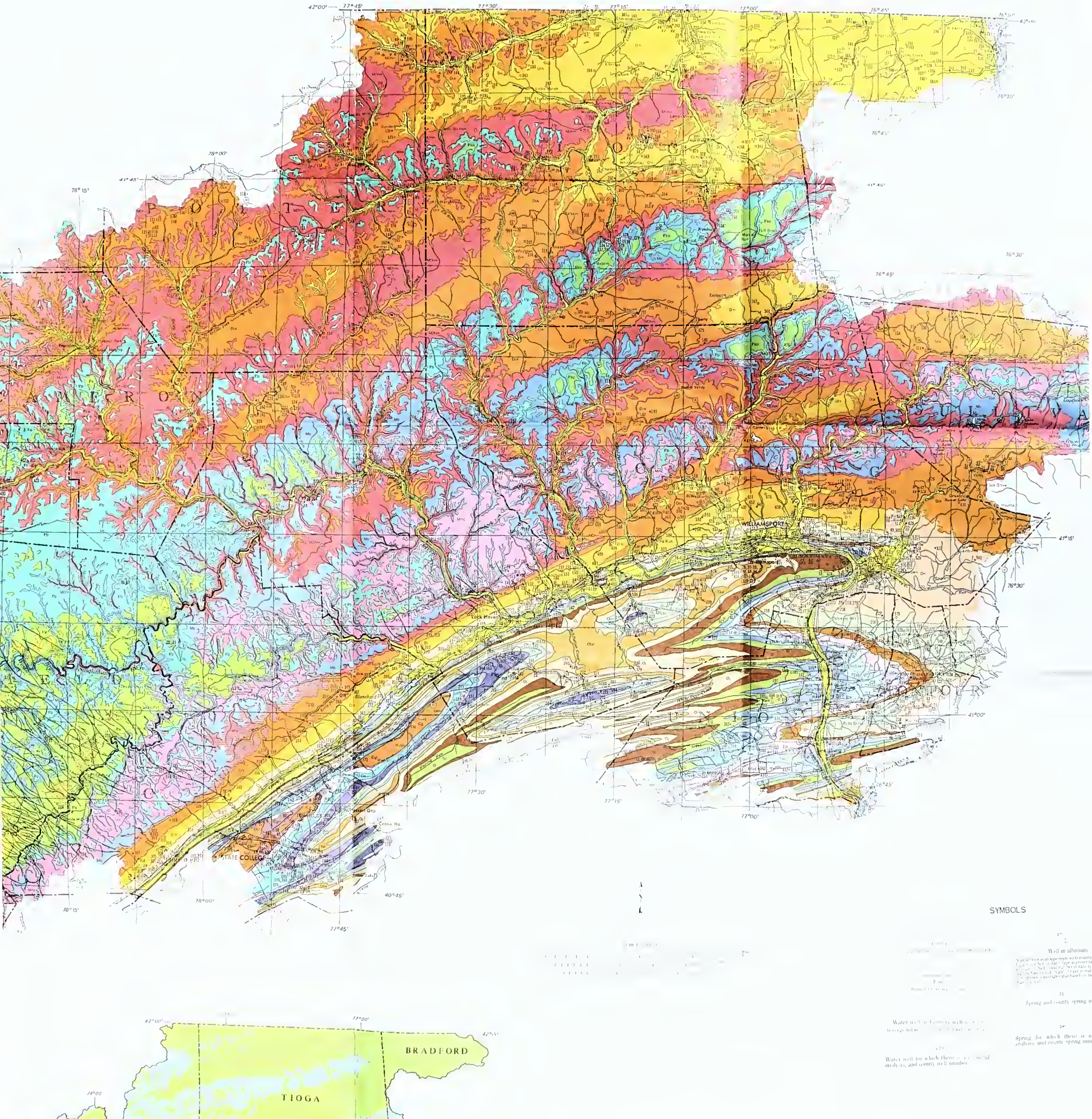






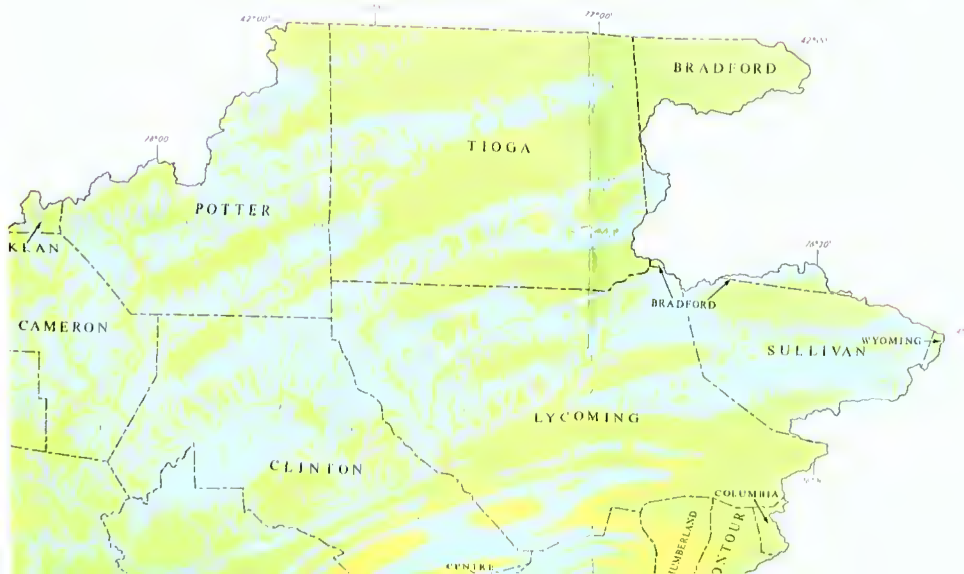
MEDIAN HARDNESS OF GROUNDWATER

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

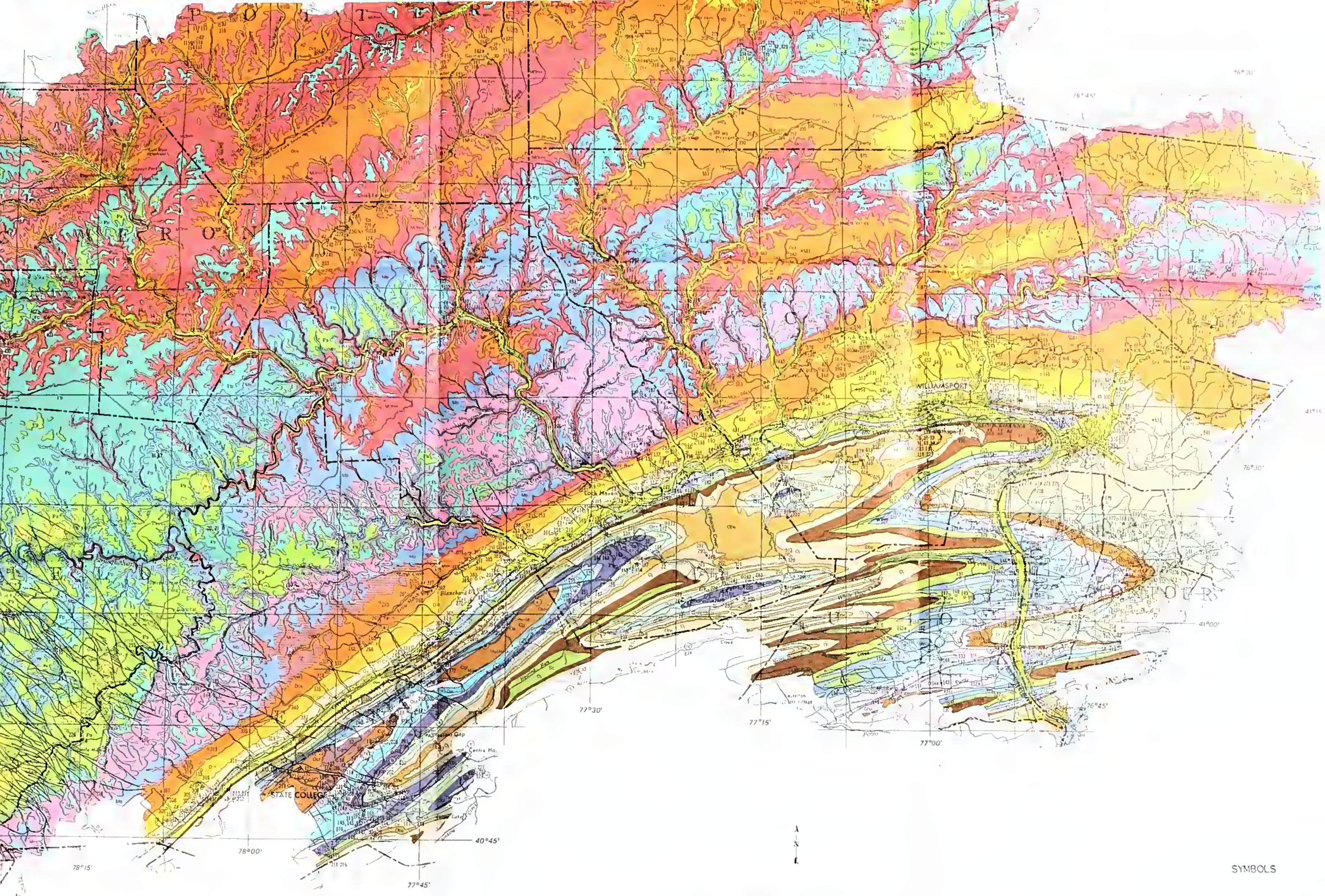


SYMBOLS

Well in alluvium



GEOLOGIC MAP OF THE WEST BRANCH
SUSQUEHANNA RIVER BASIN, PENNSYLVANIA
SHOWING LOCATIONS OF SELECTED WELLS, SPRINGS, A



SYMBOLS

Contact

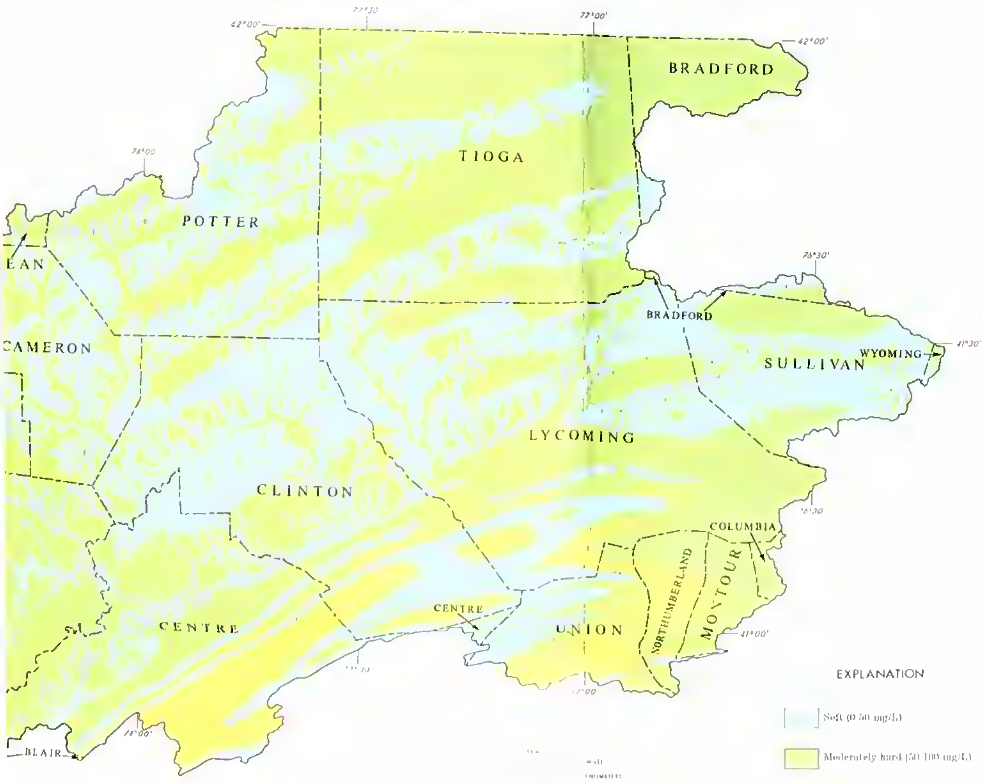
Fault

Dashed where approximate

Water well and county well number

In congested areas, only selected wells are shown.

Water well for which there is a chemical analysis, and county well number



EXPLANATION

Soft (0-50 mg/L)

Moderately hard (50-100 mg/L)

Hard (>100 mg/L)

MEDIAN HARDNESS OF GROUNDWATER

GEOLOGIC MAP OF THE WEST BRANCH SUSQUEHANNA RIVER BASIN, PENNSYLV

SHOWING LOCATIONS OF SELECTED WELLS, SPRIN SIGNIFICANT *ALLUVIUM DEPOSITS*

HYDROGEOLOGY
BY
LARRY E. TAYLOR
WILLIAM H. WERKHEISER
MARY LOU KRIZ

1983

EXPLANATION

System	UNIT	GEOLOGIC DESCRIPTION	WELL YIELDS	QUALITY OF WATER
QUATERNARY	ALLUVIUM	Poorly to well-sorted deposits of clay, silt, sand, gravel, and boulders.	Reported well yields range from 5 to 3,014 gal/min; the medians for domestic and nondomestic wells are 20 and 250 gal/min, respectively.	Water is moderately hard, contains a low to moderate amount of dissolved solids, and is occasionally high in sulfate and chloride.
PENNSYLVANIAN	CONEMAUGH GROUP: CASSELMAN FORMATION; GLENSHAW FORMATION	Shale, sandstone, thin beds of limestone and coal, and a few beds of red shale	Reported well yields range from 1 to 33 gal/min; the median for domestic wells is 10 gal/min; the median for six nondomestic wells is 16 gal/min.	Water is hard; contains a moderate to moderately high amount of dissolved solids; high levels of iron and manganese are a frequent problem.
PENNSYLVANIAN	ALLEGHENY AND POTTSVILLE GROUPS, UNDIVIDED: ALLEGHENY GROUP	Shale, sandstone, and thin beds of limestone and coal; coals are thicker than those in the overlying Conemaugh Group.	Reported well yields range from 3 to 100 gal/min; the medians for domestic and nondomestic wells are 10 and 30 gal/min, respectively.	Water is moderately hard; contains a moderate amount of dissolved solids; most supplies contain excessive iron and manganese.
PENNSYLVANIAN	POTTSVILLE GROUP	Upper part is composed of sandstone, siltstone, thin coal beds, and conglomerate; lower part is dominantly sandstone.	Reported yields range from 2 to 832 gal/min; the median for domestic wells is 16 gal/min and the median for nondomestic wells is 60 gal/min.	Water is moderately hard; contains a comparatively low amount of dissolved solids; very high concentrations of iron and manganese are a persistent problem.
MISSISSIPPIAN	MAUCH CHUNK FORMATION	Generally consists of two members: a lower unit of interbedded sandstone, siltstone, shale, and mudstone, and an upper unit of light-gray calcareous quartz sandstone.	Limited data; reported yields of seven wells range from 4 to 70 gal/min, and four have yields less than 5 gal/min.	Water is probably soft and has a low to moderate amount of dissolved solids.
MISSISSIPPIAN	BURGOON SANDSTONE	Lower member is gray sandstone with minor interbedded gray shale, conglomerate, and mudstone; upper member is light-gray, fine- to medium-grained orthoquartzite.	Reported yields range from 3 to 400 gal/min; the medians for domestic and nondomestic wells are 10 and 88 gal/min, respectively.	Water is soft and relatively low in dissolved solids; many wells produce water high in iron and manganese.
MISSISSIPPIAN / DEVONIAN	ROCKWELL FORMATION; HUNTLEY MOUNTAIN FORMATION; SHENANGO FORMATION THROUGH OSWAYO FORMATION, UNDIVIDED	Huntley Mountain Formation—Gray sandstone and some thin beds of grayish-red siltstone. Rockwell Formation—Fine- to medium-grained, argillaceous sandstone with some shale and sporadic conglomerate beds. Shenango Formation through Oswayo Formation, undivided—Greenish-gray, olive, and buff sandstone and siltstone.	Reported yields range from 3 to 310 gal/min; medians are 14 gal/min for domestic wells and 73 gal/min for nondomestic wells.	Water is soft, contains a low to moderate amount of dissolved solids; about half of the wells produce water high in iron and manganese.
DEVONIAN	CATSKILL FORMATION: SHERMAN CREEK MEMBER; IRISH VALLEY MEMBER	Grayish-red sandstone, siltstone, and shale with some gray sandstone and conglomerate; sandstone layers are generally fine grained and thick bedded.	Reported well yields range from 0 to 250 gal/min; the medians are 10 and 30 gal/min for domestic and nondomestic wells, respectively.	Water is soft to moderately hard and has a moderate amount of dissolved solids; more than 25 percent of the wells produce water high in iron and manganese.
DEVONIAN	LOCK HAVEN FORMATION	Light-olive-gray interbedded sandstone, siltstone, and shale; a few beds of conglomerate occur near the top.	Reported well yields range from 1 to 600 gal/min; the medians for domestic and nondomestic wells are 8 and 25 gal/min, respectively.	Water is moderately hard and relatively high in dissolved solids; about half of the wells produce water high in iron and manganese.
DEVONIAN	BRALLIER AND HARRELL FORMATIONS, UNDIVIDED	Brallier Formation—Interbedded light-olive-gray shale and siltstone and some sandstone. Harrell Formation—Dark-gray to black shale; generally very fissile.	Reported well yields range from 1 to 60 gal/min; the medians are 5 and 30 gal/min for domestic and nondomestic wells, respectively.	Water is soft; contains a moderate amount of dissolved solids; many supplies contain high iron and manganese and occasionally hydrogen sulfide.
DEVONIAN	TRIMMERS ROCK FORMATION	Interbedded medium-gray to olive-gray siltstone, shaly siltstone, and shale.	Reported yields range from 1 to 183 gal/min and the median is 5 gal/min.	Water is soft to moderately hard and relatively low in dissolved solids.
DEVONIAN	HAMILTON GROUP	Includes the Mahantango and Marcellus Formations. Mahantango Formation—Medium- to dark-gray shale with minor amounts of siltstone and limestone. Marcellus Formation—Dark-gray to black shale.	Reported well yields range from 1 to 240 gal/min; the medians are 10 gal/min for domestic wells and 30 gal/min for nondomestic wells.	Water is moderately hard and relatively high in dissolved solids; some wells produce water high in iron, manganese, and, less often, hydrogen sulfide.
DEVONIAN	ONONDAGA AND OLD PORT FORMATIONS, UNDIVIDED	Onondaga Formation—Interbedded dark- to light-gray shale and argillaceous limestone. Old Port Formation—Gray limestone containing chert; calcareous shale; and medium- to coarse-grained, white, calcareous sandstone.	Reported well yields range from 2 to 500 gal/min; the median yields are 20 and 89 gal/min for domestic and nondomestic wells, respectively.	Water is hard and contains a moderate amount of dissolved solids.
DEVONIAN / SILURIAN	KEYSER AND TONOLOWAY FORMATIONS, UNDIVIDED	Keyser Formation—Medium-gray nodular limestone overlain by argillaceous limestone and dolomite. Tonoloway Formation—Laminated and thin- to medium-bedded, gray limestone.	Reported yields range from 4 to 460 gal/min; the median for domestic wells is 20 gal/min and the median for nondomestic wells is 80 gal/min.	Water is very hard and moderately high in dissolved solids.
SILURIAN	WILLS CREEK FORMATION	Medium-light-gray calcareous shale and siltstone; interbeds of grayish-red calcareous siltstone occur in lower part.	Reported well yields range from 6 to 130 gal/min; the medians of domestic and nondomestic wells are 12 and 60 gal/min, respectively.	Water is very hard and moderately high in dissolved solids.
SILURIAN	BLOOMSBURG AND MIFFLINTOWN FORMATIONS, UNDIVIDED	Bloomsburg Formation—Grayish-red siltstone and claystone with some interbeds of fine-grained sandstone and algal limestone. Mifflintown Formation—Thin- to medium-bedded gray limestone and interbedded calcareous shale.	Reported yields range from 3 to 300 gal/min; the medians are 11 gal/min for domestic wells and 100 gal/min for nondomestic wells.	Water is hard and contains a moderate amount of dissolved solids.
SILURIAN	CLINTON GROUP	Light-olive-gray to brownish gray shale with some interbedded siltstone and sandstone.	Reported well yields range from 1 to 60 gal/min; the median for all wells is 10 gal/min.	Water is soft to moderately hard and low in dissolved solids.
SILURIAN / ORDOVICIAN	TUSCARORA FORMATION; JUNIATA FORMATION; BALD EAGLE FORMATION	Tuscarora Formation—Fine- to coarse grained, medium- to thick-bedded, white quartzite. Juniata Formation—Grayish-red quartzose sandstone and interbedded siltstone and fine-grained sandstone. Bald Eagle Formation—Gray to greenish-gray, fine- to coarse-grained sandstone.	Reported well yields range from 1 to 100 gal/min; the median for all wells is 11 gal/min.	Water is soft to moderately hard and low in dissolved solids.
ORDOVICIAN	REEDSVILLE FORMATION	Medium-gray, thin- to medium-bedded silty shales and shaly siltstones; few interbeds of very fine grained sandstone.	Median yield, based on a limited amount of data, is 10 gal/min; yields range from 1 to 50 gal/min.	Water is hard and contains a moderate amount of dissolved solids; excessive iron, manganese, and hydrogen sulfide are common problems.
ORDOVICIAN	COBURN FORMATION THROUGH NEALMONT FORMATION, UNDIVIDED; BENNER FORMATION THROUGH LOYSBURG FORMATION, UNDIVIDED	Coburn Formation—Medium-gray limestone. Salona Formation—Shaly limestone and calcareous shale. Nealmont Formation—Medium-gray fossiliferous limestone. Benner Formation—Gray, thick-bedded limestone. Snyder Formation—Light- to medium-gray limestone. Hatter Formation—Medium-gray, argillaceous limestone. Loysburg Formation—Light- to medium-gray, medium-bedded limestone overlying laminated, alternating limestone and dolomite.	Reported yields range from 1 to 60 gal/min; the median is 12 gal/min.	Water is hard and moderately high in dissolved solids.
ORDOVICIAN	BELLEFONTE FORMATION; AXEMANN FORMATION	Bellefonte Formation—Gray, very fine to fine-grained dolomite with some limestone interbeds. Axemann Formation—Blue limestone interbedded with fine-grained dolomitic limestone.	Reported yields range between 0 and 500 gal/min; the medians for domestic and nondomestic wells are 12 and 50 gal/min, respectively.	Water is very hard and high in dissolved solids.
ORDOVICIAN	NITTANY FORMATION; STONEHENGE/LARKE FORMATION	Nittany Formation—Medium- to dark-gray, thick-bedded dolomite containing chert. Stonehenge Formation—Medium-gray, medium-bedded to laminated, oolitic limestone. Larke Formation—Medium- to dark-gray, coarsely crystalline dolomite.	The median reported yield of domestic wells is 20 gal/min and the range is 5 to 60 gal/min.	Water is very hard and moderately high in dissolved solids.
CAMBRIAN	GATESBURG FORMATION: MINES MEMBER; LOWER MEMBERS	Gray dolomite and chert (Mines Member) overlying cyclic repetitions of sandstone and dolomite, limestone and dolomite, sandstone and dolomite, and crystalline dolomite.	Reported yields of nondomestic wells range from 15 to 8,000 gal/min and the median is 425 gal/min.	Water is very hard and relatively high in dissolved solids.
CAMBRIAN	WARRIOR FORMATION	Blue and gray, thin- to thick-bedded dolomite and some thin beds of siliceous shale or sandstone	Limited data; well yields are probably small to moderate.	Water is probably hard to very hard and moderately high in dissolved solids.

SYMBOLS

Contact
Includes approximately located and inferred contacts

Fault
Dashed where approximate

Water well and county well number
In congested areas, only selected wells are shown

Water well for which there is a chemical analysis, and county well number

Well in alluvium
Number in roman type represents county well number. Upper number in italic type represents thickness of alluvium in feet, lower number in italic type represents reported well yield, in gallons per minute. Number in parentheses is average value based on data from more than one well.

Spring and county spring number

Spring for which there is a chemical analysis, and county spring number

PHYSICAL AND WATER-QUALITY CHARACTERISTICS FOR WELLS COMPLETED IN ALLUVIUM

	Reported well depth (feet)			Reported water level (feet)			Reported yield (gal/min)			Hardness (grains per gallon)			Specific conductance (micromhos at 25°C)		
	N[1]	M[2]	R[3]	N	M	R	N	M	R	N	M	R	N	M	R
Domestic	71	48	14-207	65	15	0-121	52	20	5-60	20	4	1-19	22	195	38-800
Nondomestic	66	46	11-126	57	10	0-89	60	250	6-3,014	20	6	1-10	16	195	50-380

[1]N is number of values.
[2]M is median value.
[3]R is range of values.

OLOGIC MAP OF THE WEST BRANCH CHANNA RIVER BASIN, PENNSYLVANIA

LOCATIONS OF SELECTED WELLS, SPRINGS, AND SIGNIFICANT ALLUVIUM DEPOSITS

HYDROGEOLOGY
BY
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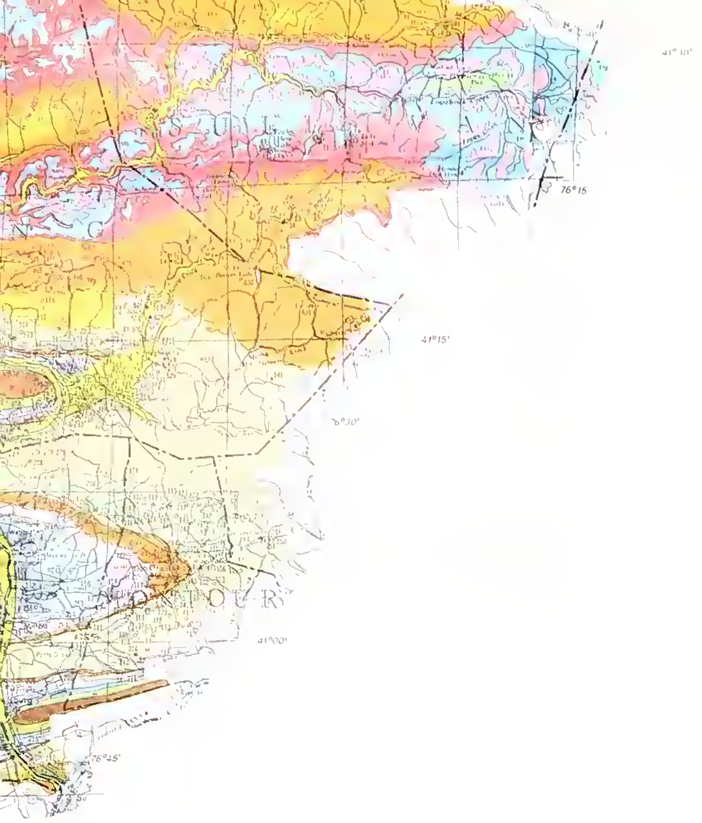
1983



	Unit	Description	Reported yield	Water quality
MISSISSIPPIAN	BURGOON SANDSTONE	Lower member is gray sandstone with minor interbedded gray shale, conglomerate and mudstone; upper member is light gray, fine- to medium-grained orthoquartzite	Reported yields range from 3 to 400 gal/min; the medians for domestic and nondomestic wells are 10 and 88 gal/min, respectively	Water is soft and relatively low in dissolved solids; many wells produce water high in iron and manganese.
MISSISSIPPIAN	ROCKWELL FORMATION / HUNTLEY MOUNTAIN FORMATION / SHENANGO FORMATION THROUGH OSWAYO FORMATION, UNDIVIDED	Huntley Mountain Formation—Gray sandstone and some thin beds of grayish red siltstone. Rockwell Formation—Fine- to medium-grained, argillaceous sandstone with some shale and sporadic conglomerate beds. Shenango Formation through Oswayo Formation, undivided—Greenish gray, olive, and buff sandstone and siltstone	Reported yields range from 3 to 310 gal/min; the medians are 14 gal/min for domestic wells and 73 gal/min for nondomestic wells.	Water is soft, contains a low to moderate amount of dissolved solids, about half of the wells produce water high in iron and manganese.
DEVONIAN	CATSKILL FORMATION: SHERMAN CREEK MEMBER; IRISH VALLEY MEMBER	Grayish red sandstone, siltstone, and shale with some gray sandstone and conglomerate; sandstone layers are generally fine grained and thick bedded.	Reported well yields range from 0 to 250 gal/min; the medians are 10 and 30 gal/min for domestic and nondomestic wells, respectively.	Water is soft to moderately hard and has a moderate amount of dissolved solids; more than 25 percent of the wells produce water high in iron and manganese.
DEVONIAN	LOCK HAVEN FORMATION	Light olive gray interbedded sandstone, siltstone, and shale; a few beds of conglomerate occur near the top	Reported well yields range from 1 to 600 gal/min; the medians for domestic and nondomestic wells are 8 and 25 gal/min, respectively.	Water is moderately hard and relatively high in dissolved solids; about half of the wells produce water high in iron and manganese.
DEVONIAN	BRALLIER AND HARRELL FORMATIONS, UNDIVIDED	Brallier Formation—Interbedded light olive gray shale and siltstone and some sandstone. Harrell Formation—Dark-gray to black shale; generally very fissile	Reported well yields range from 1 to 60 gal/min; the medians are 6 and 30 gal/min for domestic and nondomestic wells, respectively.	Water is soft; contains a moderate amount of dissolved solids; many supplies contain high iron and manganese and occasionally hydrogen sulfide.
DEVONIAN	TRIMMERS ROCK FORMATION	Interbedded medium gray to olive-gray siltstone, shaly siltstone, and shale.	Reported yields range from 1 to 183 gal/min and the median is 5 gal/min.	Water is soft to moderately hard and relatively low in dissolved solids.
DEVONIAN	HAMILTON GROUP	Includes the Mahantango and Marcellus Formations. Mahantango Formation—Medium- to dark-gray shale with minor amounts of siltstone and limestone. Marcellus Formation—Dark gray to black shale.	Reported well yields range from 1 to 240 gal/min; the medians are 10 gal/min for domestic wells and 30 gal/min for nondomestic wells.	Water is moderately hard and relatively high in dissolved solids; some wells produce water high in iron, manganese, and, less often, hydrogen sulfide.
DEVONIAN	ONONDAGA AND OLD PORT FORMATIONS, UNDIVIDED	Onondaga Formation—Interbedded dark- to light-gray shale and argillaceous limestone. Old Port Formation—Gray limestone containing chert, calcareous shale, and medium- to coarse-grained, white, calcareous sandstone.	Reported well yields range from 2 to 500 gal/min; the median yields are 20 and 80 gal/min for domestic and nondomestic wells, respectively.	Water is hard and contains a moderate amount of dissolved solids.
SILURIAN	KEYSER AND TONOLOWAY FORMATIONS, UNDIVIDED	Keyser Formation—Medium-gray nodular ... by argillaceous limestone and dolomite. Tonoloway Formation—Laminated and thin- to medium-bedded, gray limestone	Reported yields range from 4 to 460 gal/min; the median for domestic wells is 20 gal/min and the median for nondomestic wells is 80 gal/min.	*Water is very hard and moderately high in dissolved solids.*
SILURIAN	WILLS CREEK FORMATION	Medium-light gray calcareous shale and siltstone; interbeds of grayish-red calcareous siltstone occur in lower part.	Reported well yields range from 6 to 130 gal/min; the medians of domestic and nondomestic wells are 12 and 60 gal/min, respectively	Water is very hard and moderately high in dissolved solids
SILURIAN	BLOOMSBURG AND MIFFLINTOWN FORMATIONS, UNDIVIDED	Bloomsburg Formation—Grayish red siltstone and claystone with some interbeds of fine grained sandstone and algal limestone. Mifflintown Formation—Thin- to medium-bedded gray limestone and interbedded calcareous shale.	Reported yields range from 3 to 300 gal/min; the medians are 11 gal/min for domestic wells and 100 gal/min for nondomestic wells.	Water is hard and contains a moderate amount of dissolved solids
SILURIAN	CLINTON GROUP	Light olive gray to brownish gray shale with some interbedded siltstone and sandstone	Reported well yields range from 1 to 60 gal/min; the median for all wells is 10 gal/min.	Water is soft to moderately hard and low in dissolved solids.
SILURIAN / ORDOVICIAN	TUSCARORA FORMATION / JUNIATA FORMATION / BALD EAGLE FORMATION	Tuscarora Formation—Fine- to coarse-grained, medium- to thick-bedded white quartzite. Juniata Formation—Grayish red quartzose sandstone and interbedded siltstone and fine grained sandstone. Bald Eagle Formation—Gray to greenish-gray, fine- to coarse grained sandstone	Reported well yields range from 1 to 100 gal/min; the median for all wells is 11 gal/min.	Water is soft to moderately hard and low in dissolved solids.
ORDOVICIAN	REEDSVILLE FORMATION	Medium-gray, thin- to medium-bedded silty shales and shaly siltstones; few interbeds of very fine grained sandstone.	Median yield, based on a limited amount of data, is 10 gal/min, yields range from 1 to 50 gal/min.	Water is hard and contains a moderate amount of dissolved solids; excessive iron, manganese, and hydrogen sulfide are common problems.
ORDOVICIAN	COBURN FORMATION THROUGH NEALMONT FORMATION, UNDIVIDED / BENNER FORMATION THROUGH LOYSBURG FORMATION, UNDIVIDED	Coburn Formation—Medium-gray limestone. Salona Formation—Shaly limestone and calcareous shale. Nealmont Formation—Medium-gray fossiliferous limestone. Benner Formation—Gray, thick-bedded limestone. Snyder Formation—Light- to medium-gray limestone. Hatter Formation—Medium-gray, argillaceous limestone. Loysburg Formation—Light- to medium-gray, medium-bedded limestone overlying laminated, alternating limestone and dolomite	Reported yields range from 1 to 60 gal/min; the median is 12 gal/min	Water is hard and moderately high in dissolved solids.
ORDOVICIAN	BELLEFONTE FORMATION / AXEMANN FORMATION	Bellefonte Formation—Gray, very fine to fine-grained dolomite with some limestone interbeds. Axemann Formation—Blue limestone interbedded with fine-grained dolomitic limestone.	Reported yields range between 0 and 500 gal/min; the medians for domestic and nondomestic wells are 12 and 50 gal/min, respectively	Water is very hard and high in dissolved solids.
ORDOVICIAN	NITTANY FORMATION / STONEHENGE/LARKE FORMATION	Nittany Formation—Medium- to dark gray, thick-bedded dolomite containing chert. Stonehenge Formation—Medium gray, medium-bedded to laminated, oolitic limestone. Larke Formation—Medium- to dark-gray, coarsely crystalline dolomite.	The median reported yield of domestic wells is 20 gal/min and the range is 5 to 60 gal/min.	Water is very hard and moderately high in dissolved solids.
CAMBRIAN	GATESBURG FORMATION: MINES MEMBER; LOWER MEMBERS	Gray dolomite and chert (Mines Member) overlying cyclic repetitions of sandstone and dolomite, limestone and dolomite, sandstone and dolomite, and crystalline dolomite.	Reported yields of nondomestic wells range from 15 to 8,000 gal/min and the median is 425 gal/min.	Water is very hard and relatively high in dissolved solids.
CAMBRIAN	WARRIOR FORMATION	Blue and gray, thin- to thick-bedded dolomite and some thin beds of siliceous shale or sandstone.	Limited data; well yields are probably small to moderate.	Water is probably hard to very hard and moderately high in dissolved solids.

SYMBOLS

Contact
Includes approximately located and inferred contacts

Fault
Dashed where approximate

Water well and county well number
In congested areas, only selected wells are shown

Water well for which there is a chemical analysis, and county well number

Well in alluvium
Number in roman type represents county well number. Upper number in italic type represents thickness of alluvium, in feet; lower number in italic type represents reported well yield, in gallons per minute. Numbers in parentheses is average value based on data from more than one well

Spring and county spring number

Spring for which there is a chemical analysis, and county spring number

PHYSICAL AND WATER-QUALITY CHARACTERISTICS FOR WELLS COMPLETED IN ALLUVIUM

	Reported well depth (feet)			Reported water level (feet)			Reported yield (gal/min)			Hardness (grains per gallon)			Specific conductance (micromhos at 25°C)		
	N[1]	M[2]	R[3]	N	M	R	N	M	R	N	M	R	N	M	R
Domestic	71	48	14-207	65	15	0-121	52	20	5-60	20	4	1-19	22	195	38-800
Nondomestic	66	46	11-126	57	10	0-89	60	250	6-3,014	20	6	1-10	16	195	50-380

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Geology and base map from Berg and others (1980).
Hydrology by L. E. Taylor, W. H. Werkheiser, and M. L. Kriz, 1980-82.

Geary L. Sarno, Cartographer.